



**SSSR**

Swiss Society of  
Musculoskeletal Radiology

# Common Interventions in Knee Surgery – Surgical Techniques and Approaches

Ramin Herschel, MD



uniklinik  
balgrist

# Common Interventions in Knee Surgery

---

- **Knee Arthroscopy**  
**Meniscectomy / Suture**
- **Anterior Cruciate Ligament Reconstruction**
- **Patellar Stabilization Procedures**
- **Prosthetic Replacement Surgery of the Knee**  
↳ next session



# CASE 1

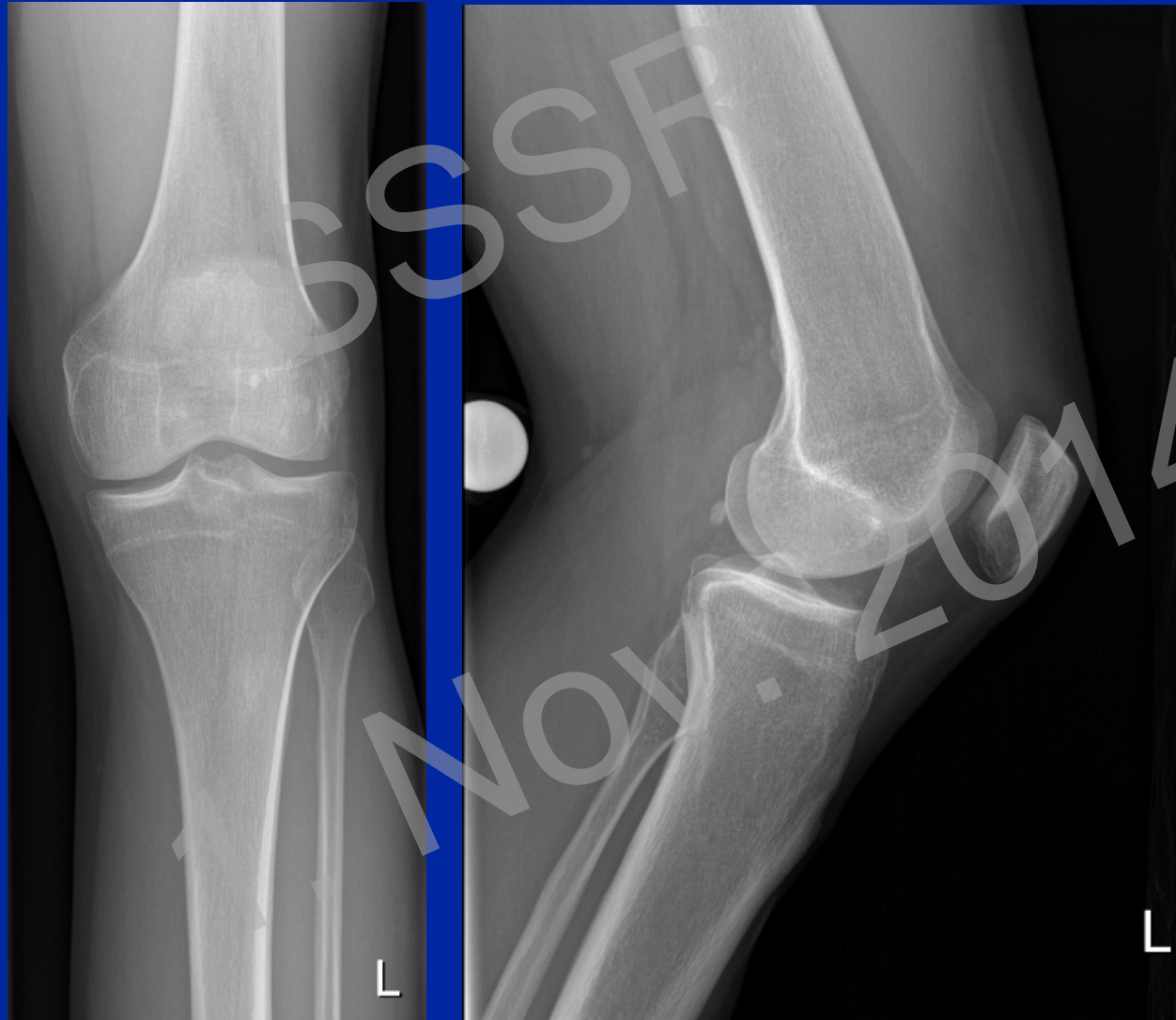
---

- 34 yo, male
- Felt «popping» in left knee, stepping out of a bus
- Tenderness, positive medial meniscus signs

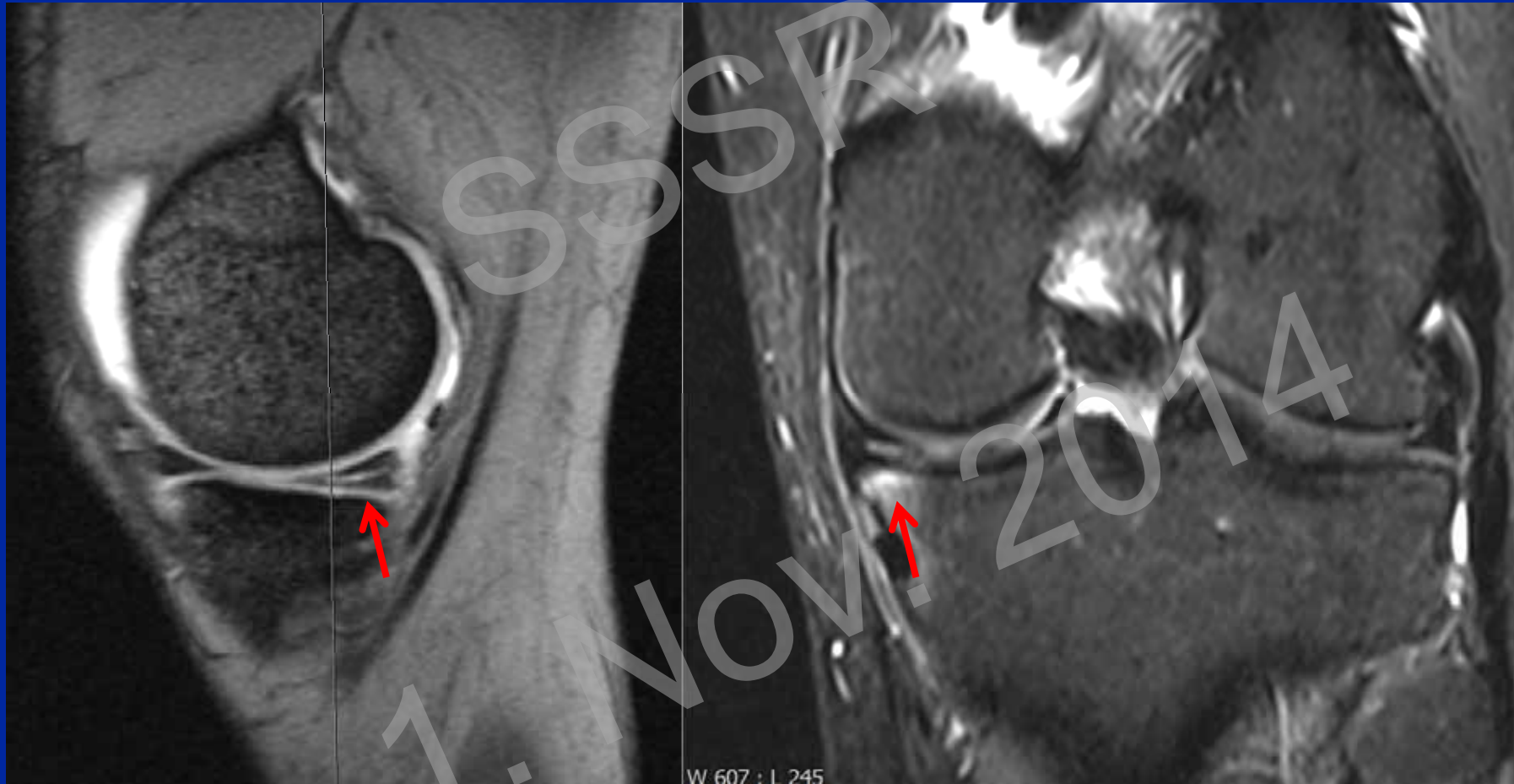
SSSR  
1. Nov. 2014



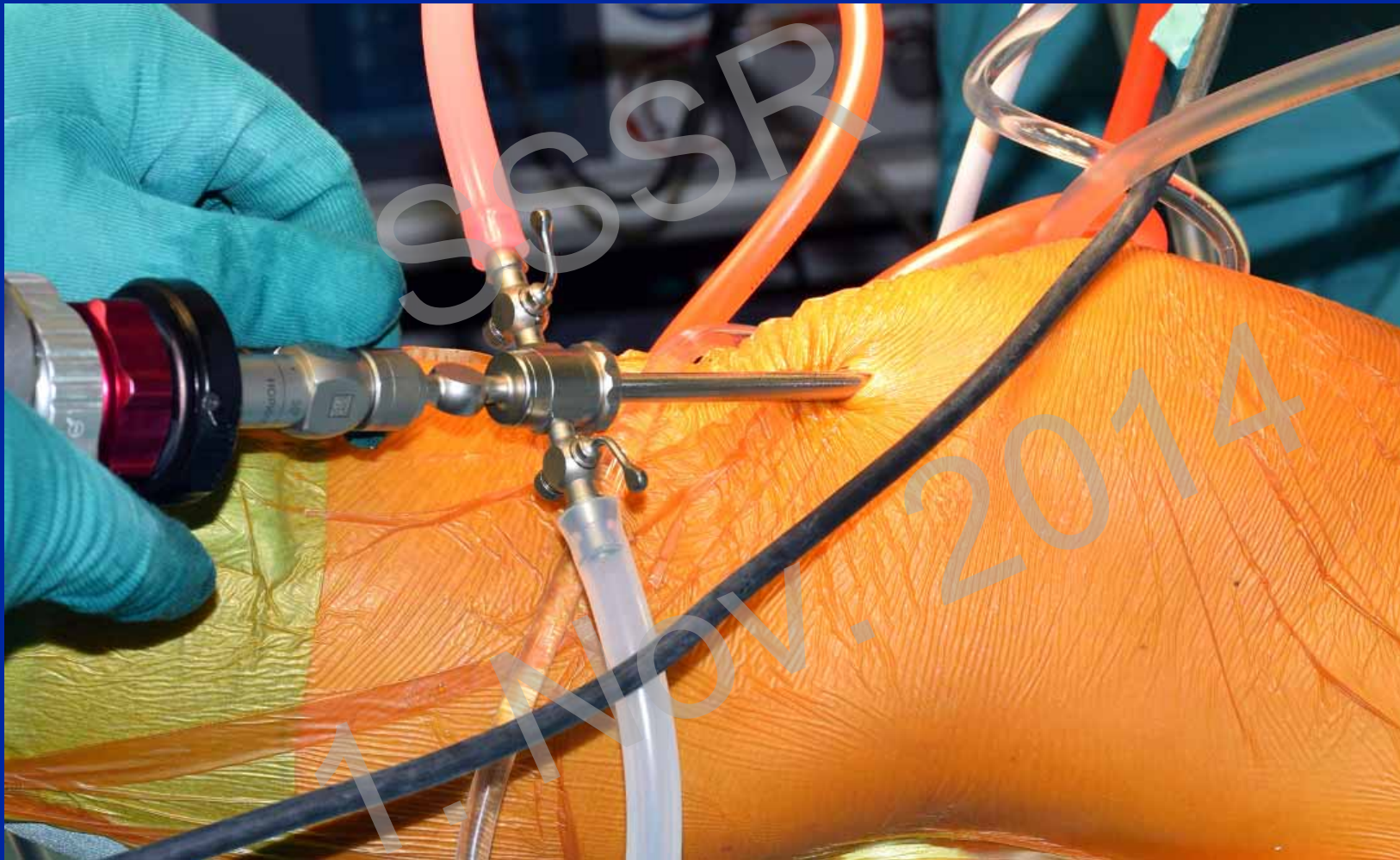
# X-RAYS



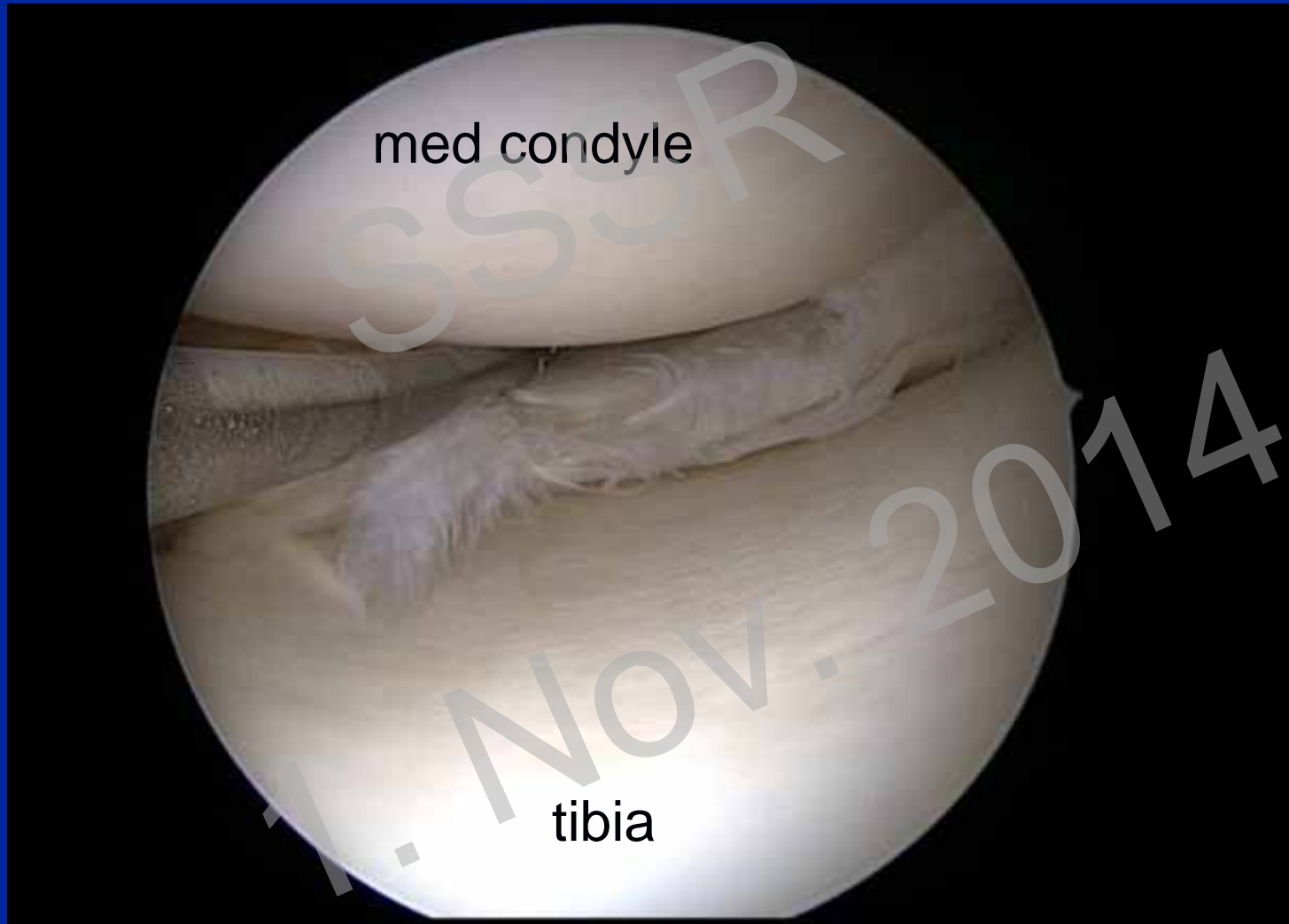
# MRI



# ARTHROSCOPY



# ARTHROSCOPY



# ARTHROSCOPY

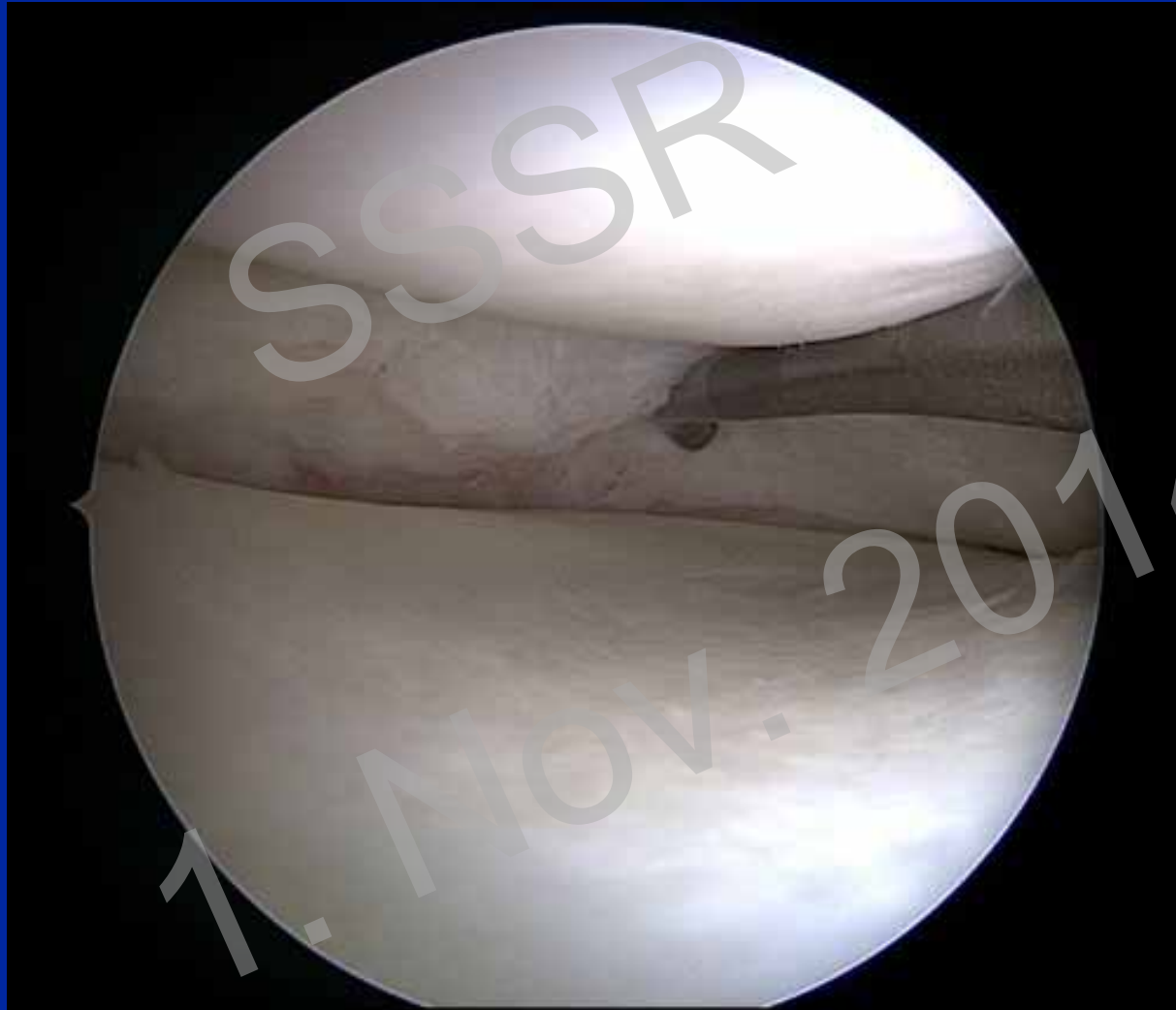




# PARTIAL MENISCECTOMY



# PARTIAL MENISCECTOMY



## CASE 2

---

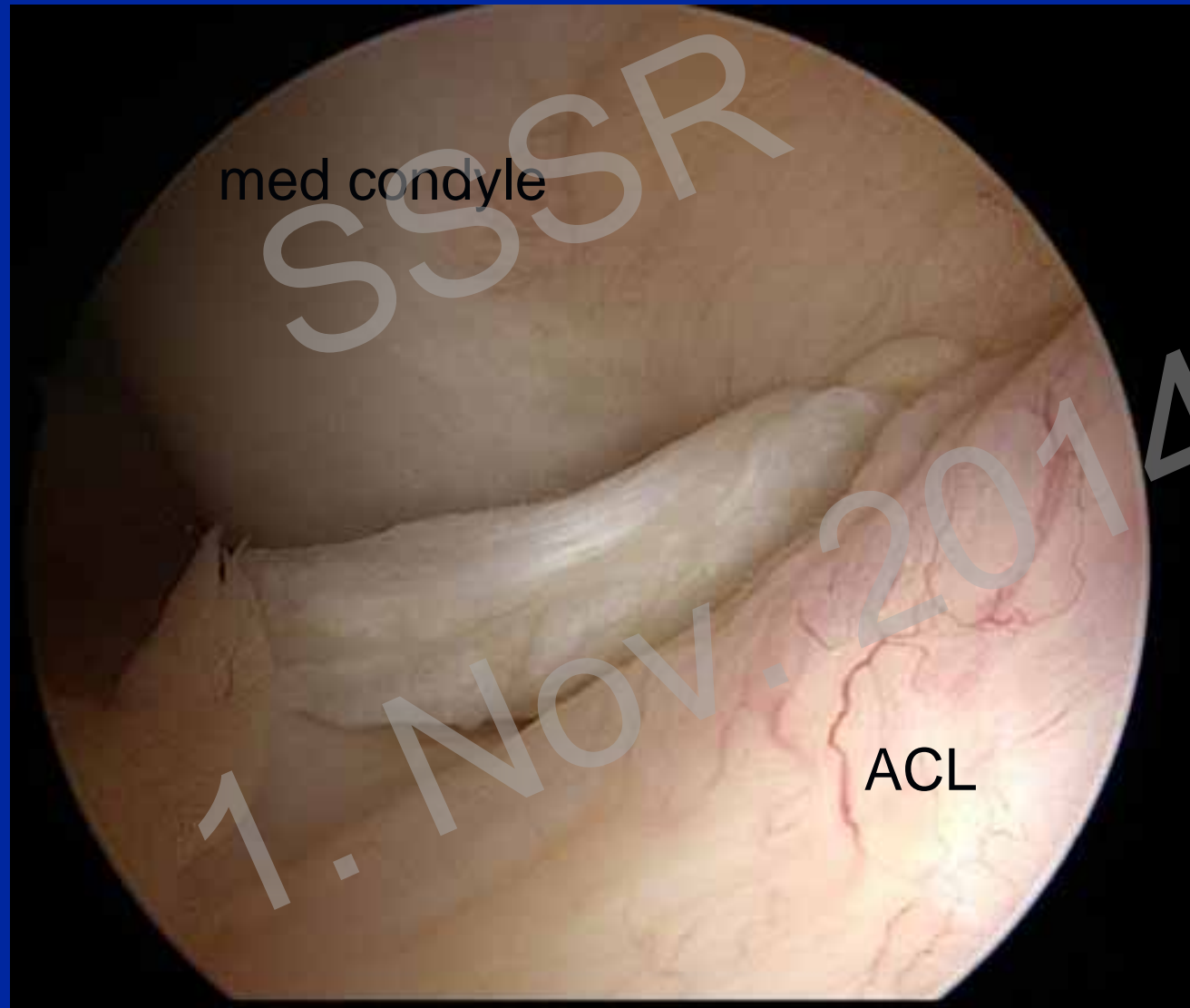
- 28 yo, male
- Sudden pain left knee when getting up from kneeling
- Tenderness, swelling, positive medial meniscus signs
- Incomplete extension



# MRI



# ARTHROSCOPY



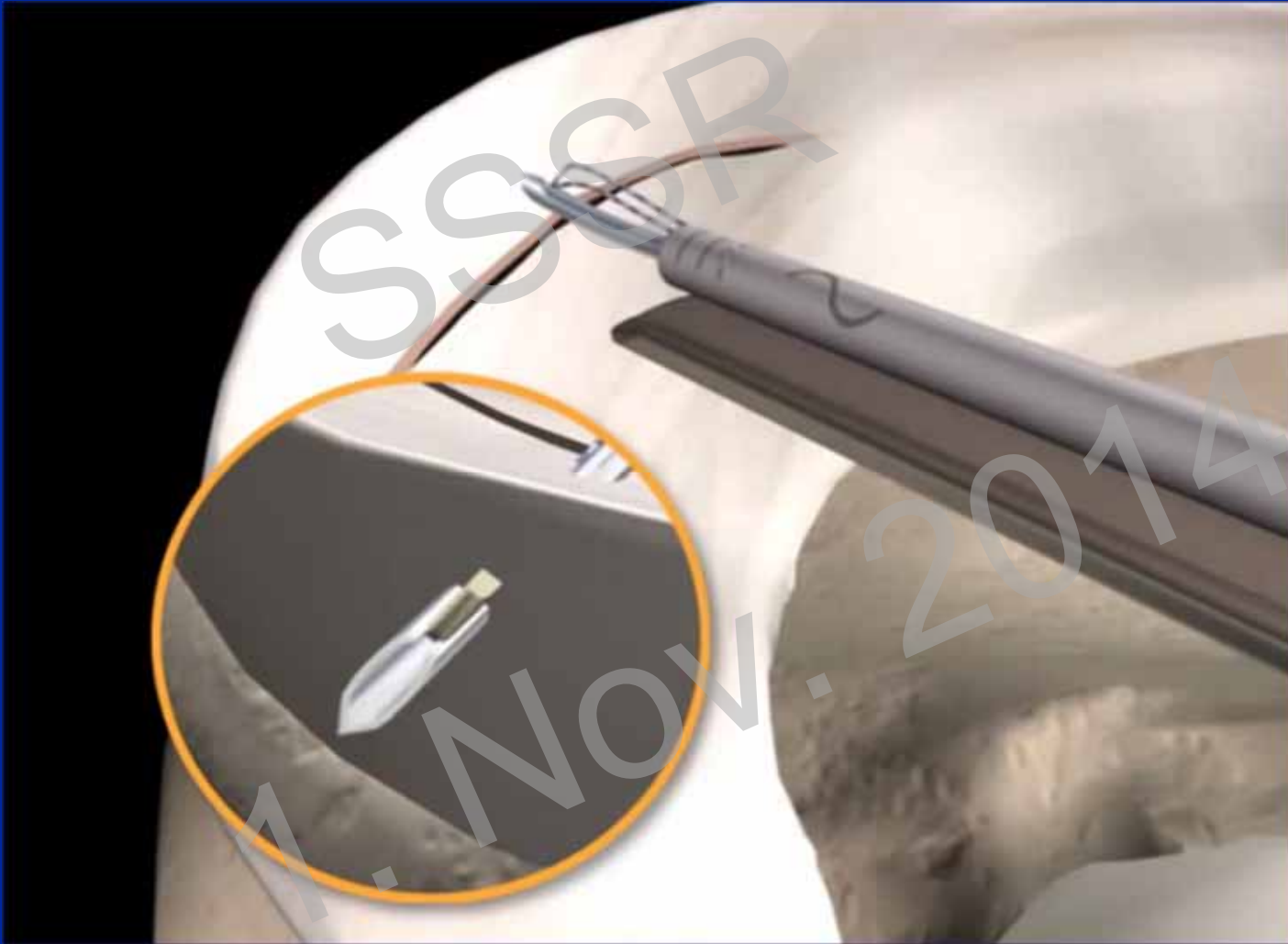
# ARTHROSCOPY



# MENISCUS SUTURE



# MENISCUS SUTURE

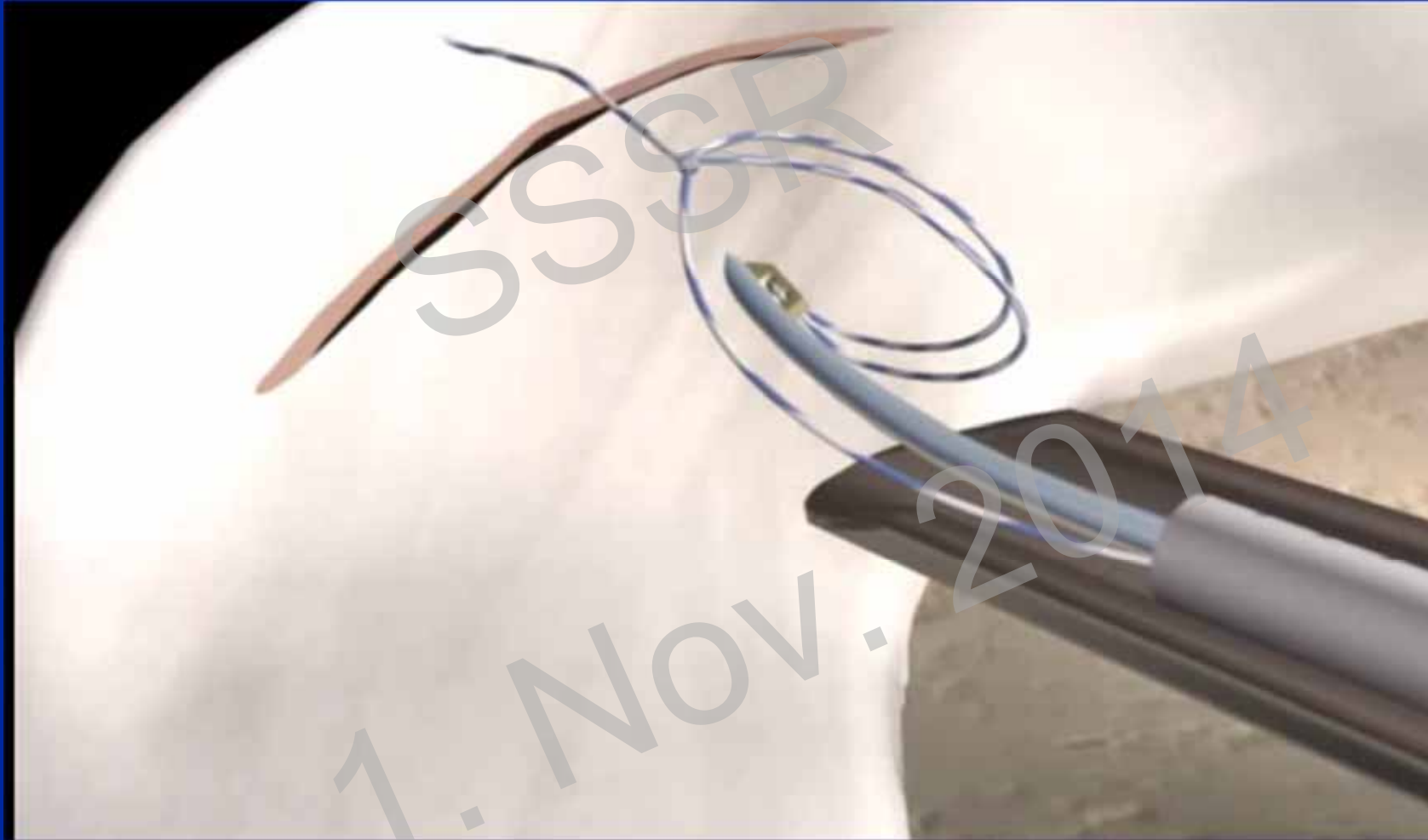


© smith&nephew ULTRA FAST-FIX™

uniklinik  
balgrist



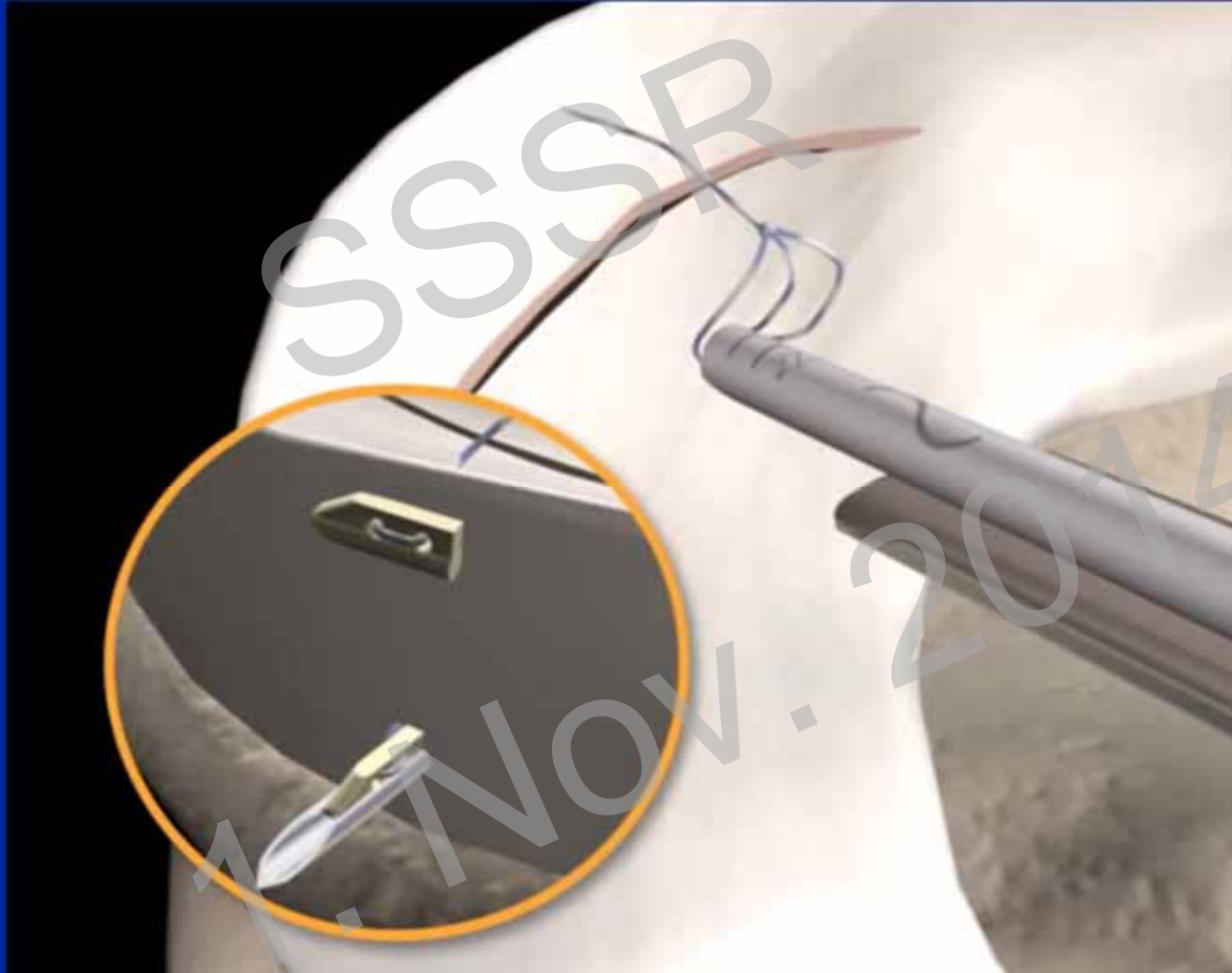
# MENISCUS SUTURE



© smith&nephew ULTRA FAST-FIX™

uniklinik  
balgrist

# MENISCUS SUTURE



© smith&nephew ULTRA FAST-FIX™

uniklinik  
balgrist

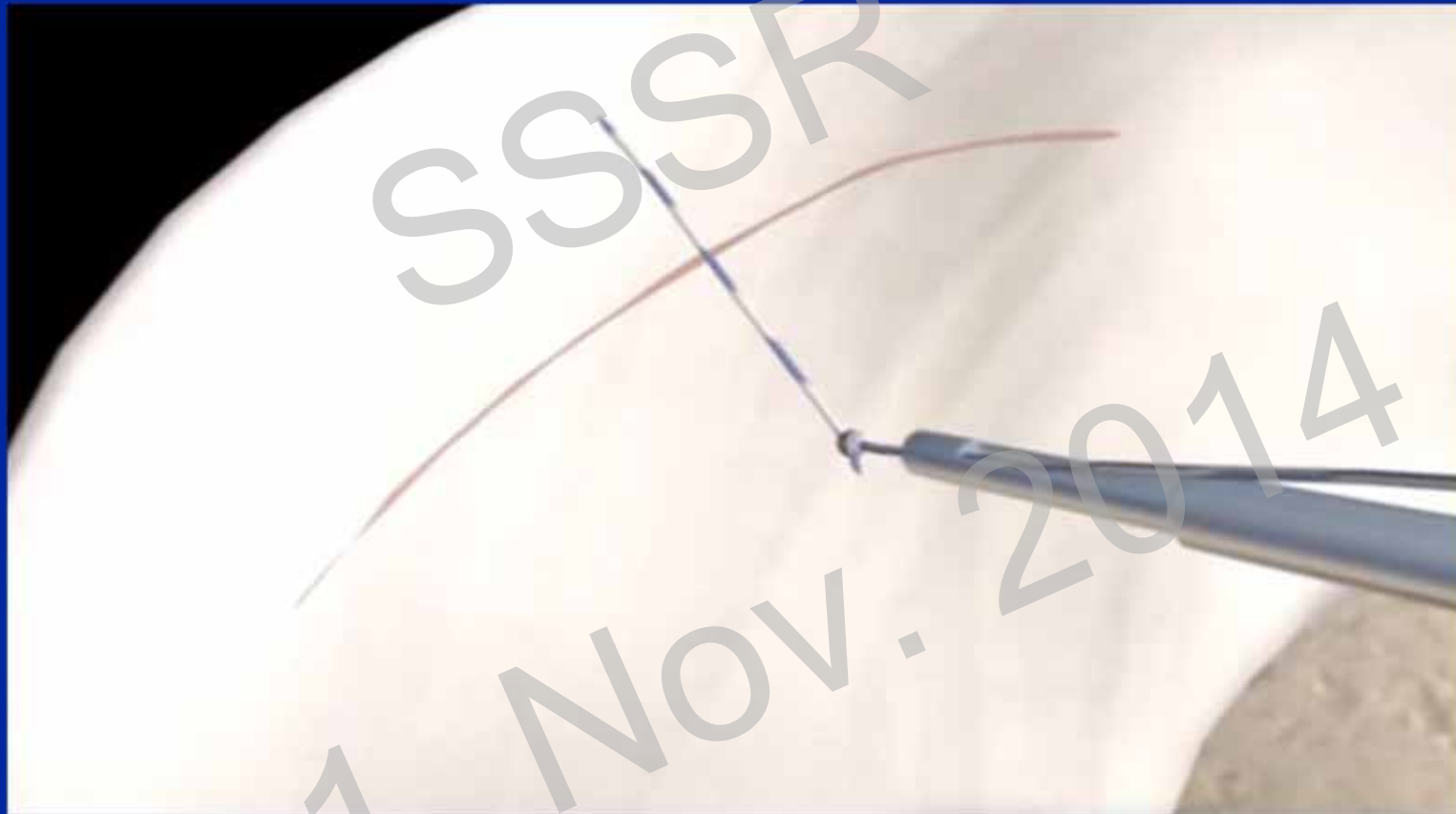
# MENISCUS SUTURE



© smith&nephew ULTRA FAST-FIX™

uniklinik  
balgrist

# MENISCUS SUTURE



© smith&nephew ULTRA FAST-FIX™

uniklinik  
balgrist

# MENISCUS SUTURE



© smith&nephew ULTRA FAST-FIX™

uniklinik  
balgrist

# MENISCUS SUTURE



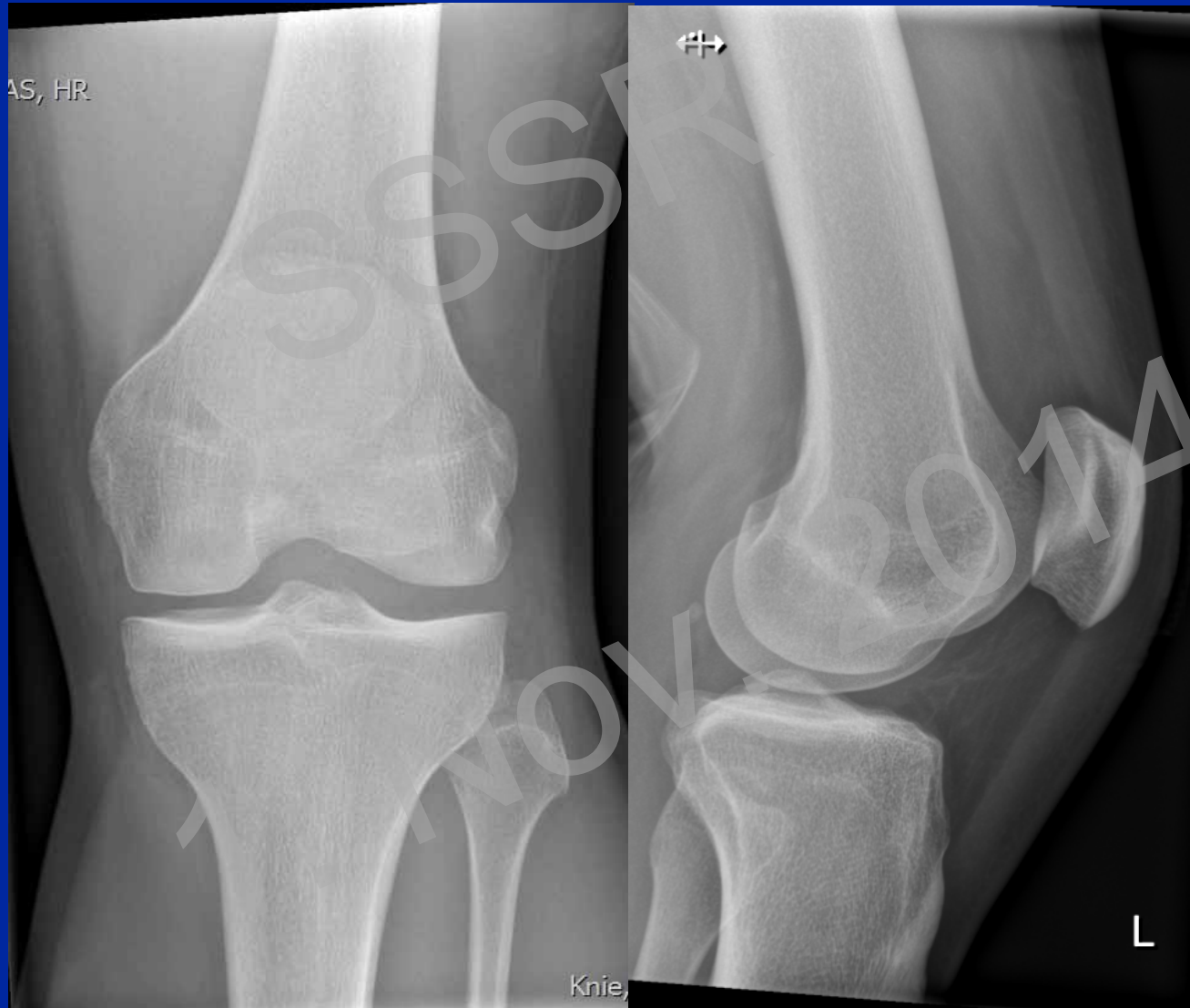
## CASE 3

---

- 27 yo, male
- Distorsion left knee (soccer) 3 weeks before
- Positive Lachman and anterior drawer test
- Grade 2 MCL laxity
- Meniscus signs not conclusive



# X-RAYS (ext. hospital)





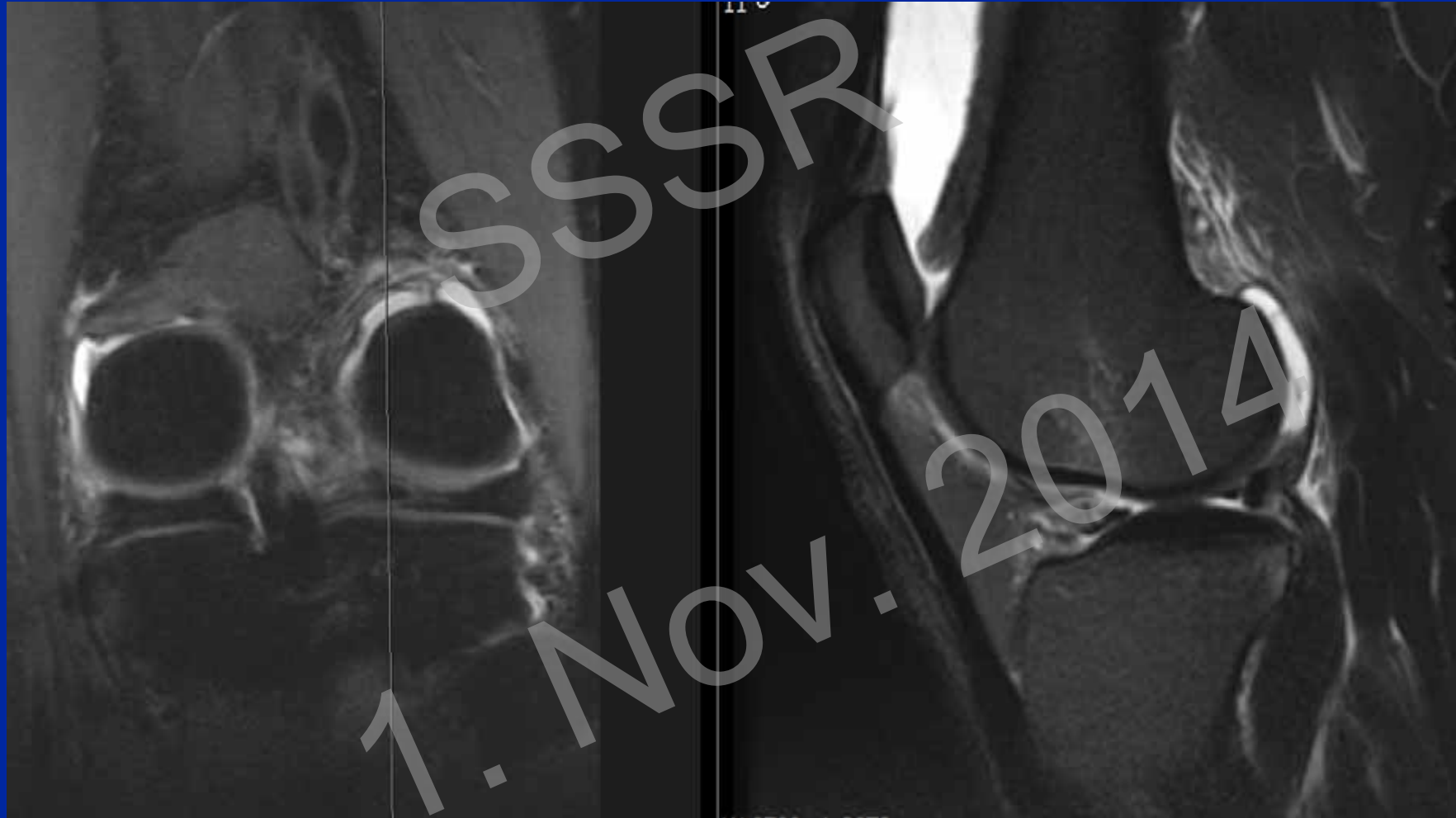
# MRI (ext. hospital)



# MRI (ext. hospital)



# MRI (ext. hospital)



# MRI (ext. hospital)



## CASE 3

---

- **Conservative treatment of MCL lesion (brace): stable after 8 weeks**
- **Persisting ACL laxity, positive lateral meniscus signs: operative treatment**



# ACL RECONSTRUCTION

---



# ACL RECONSTRUCTION



# ACL RECONSTRUCTION





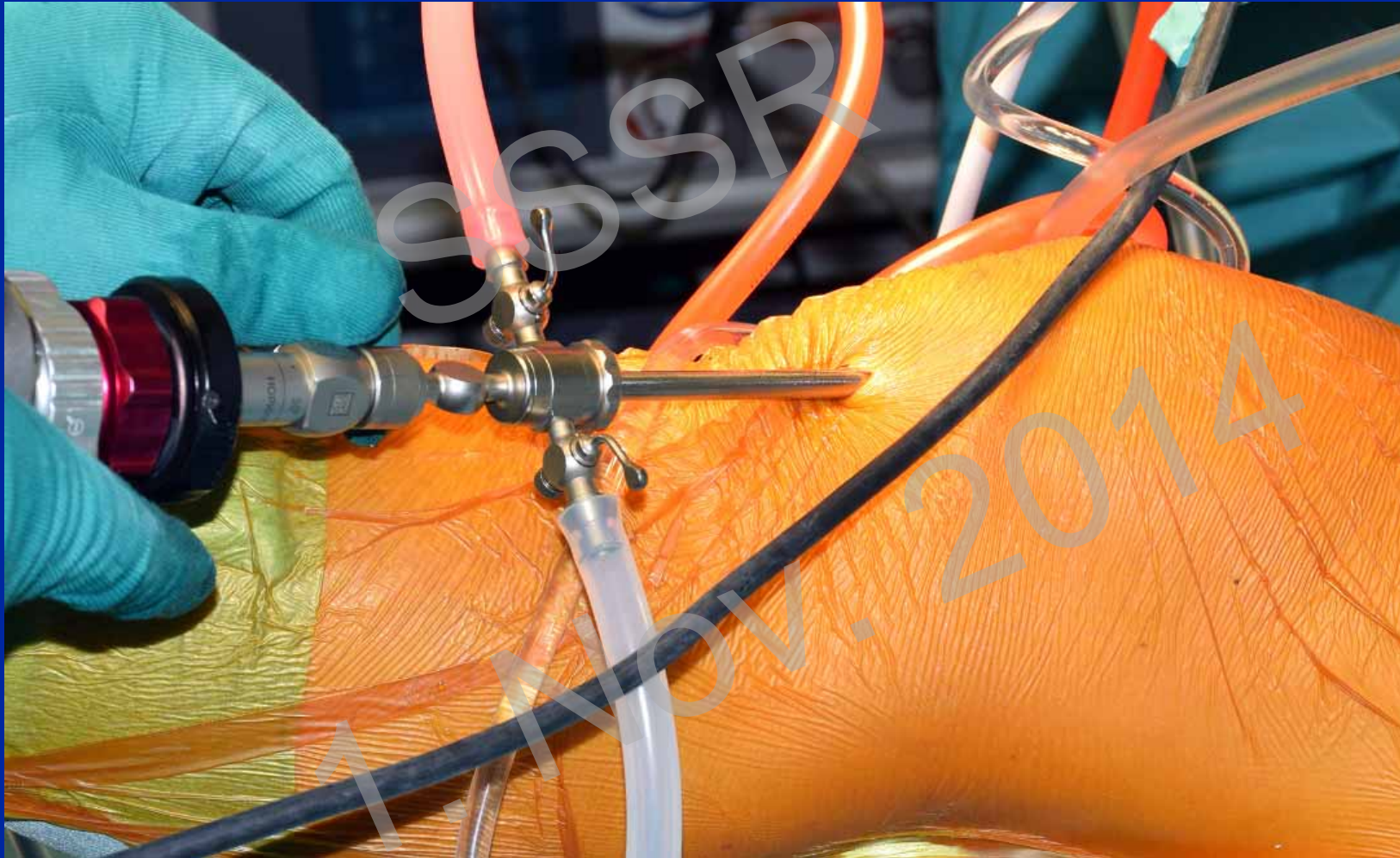
# ACL RECONSTRUCTION



# ACL RECONSTRUCTION



# ACL RECONSTRUCTION



# ACL RECONSTRUCTION



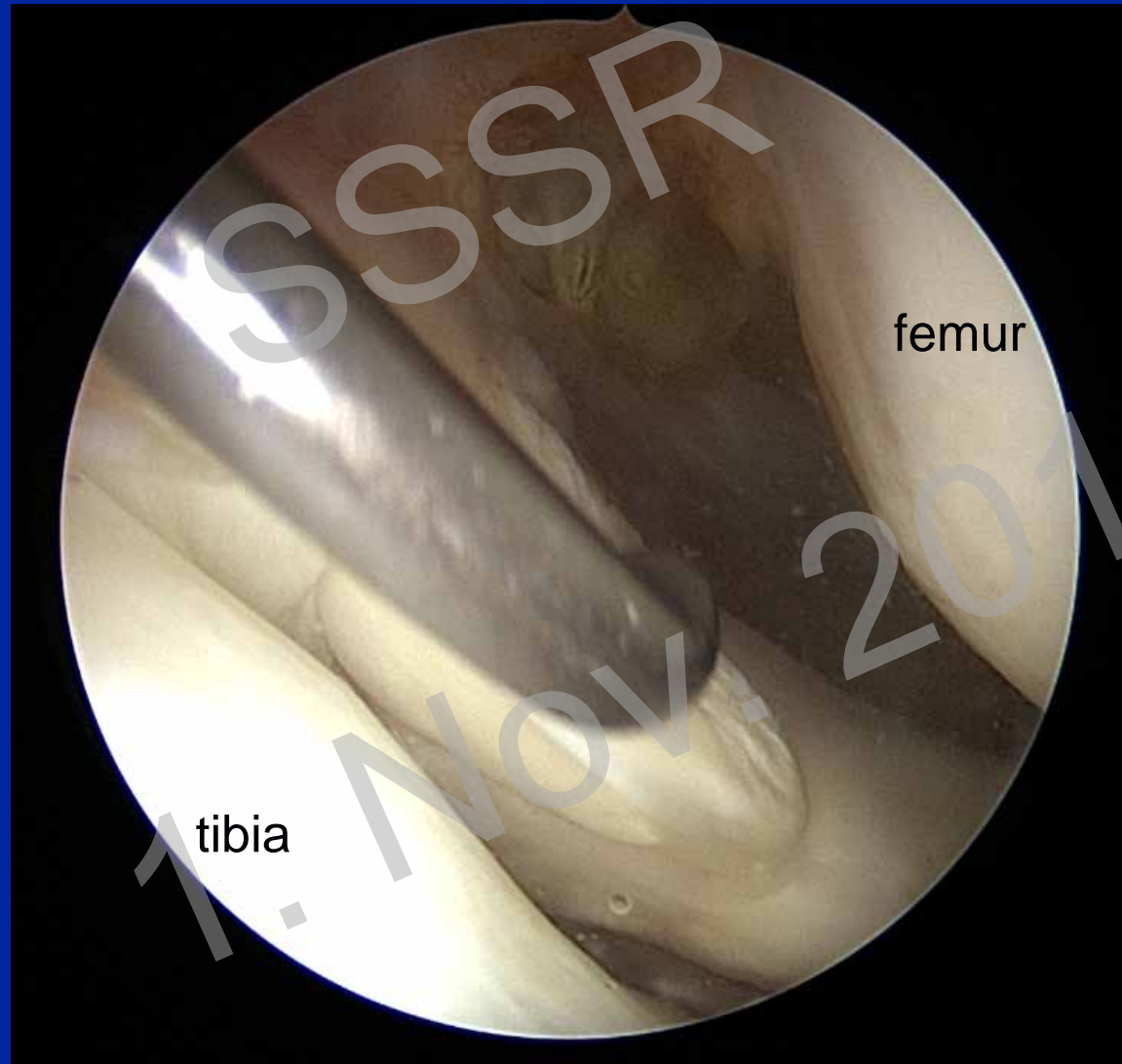
# ACL RECONSTRUCTION



# ACL RECONSTRUCTION

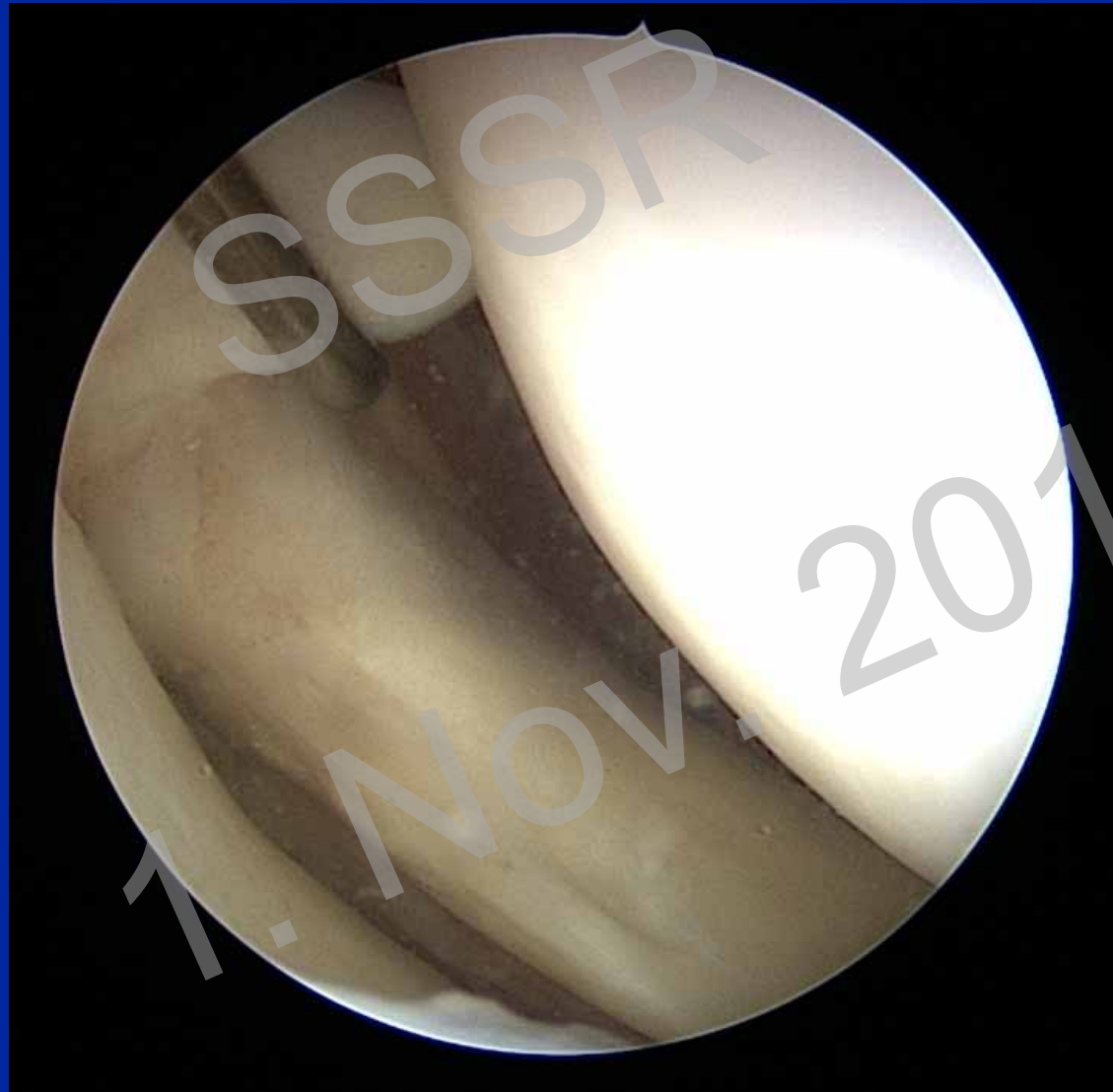


# ACL RECONSTRUCTION



# ACL RECONSTRUCTION

---





# ACL RECONSTRUCTION



# ACL RECONSTRUCTION



lat intercondylar wall



# ACL RECONSTRUCTION



# ACL RECONSTRUCTION



# ACL RECONSTRUCTION



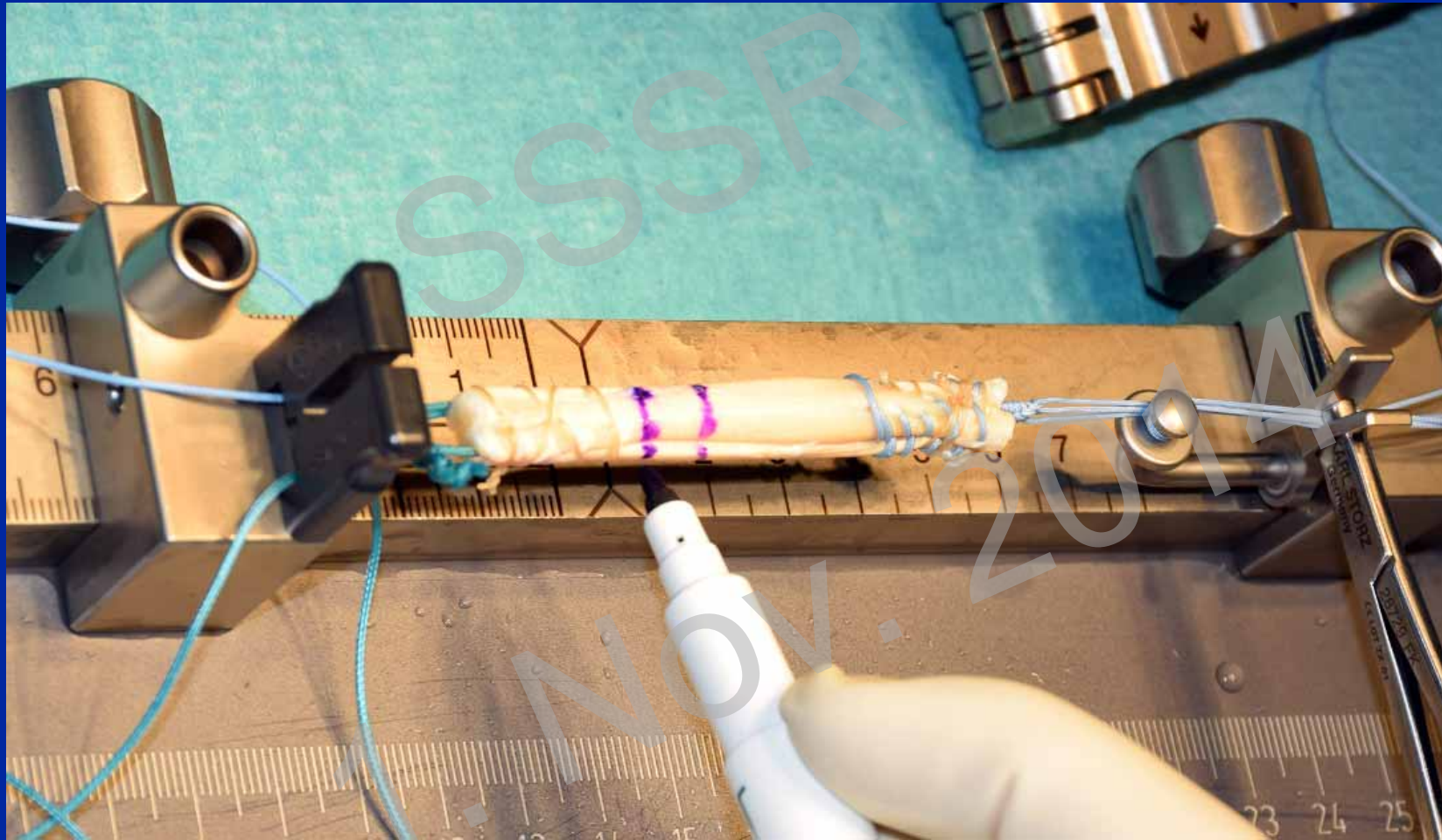
# ACL RECONSTRUCTION



© KARL STORZ – FLIPPTACK®; ENDOTACK®

uniklinik  
balgrist

# ACL RECONSTRUCTION



# ACL RECONSTRUCTION





# ACL RECONSTRUCTION



# ACL RECONSTRUCTION

---



# ACL RECONSTRUCTION



© KARL STORZ – MEGA FIX®

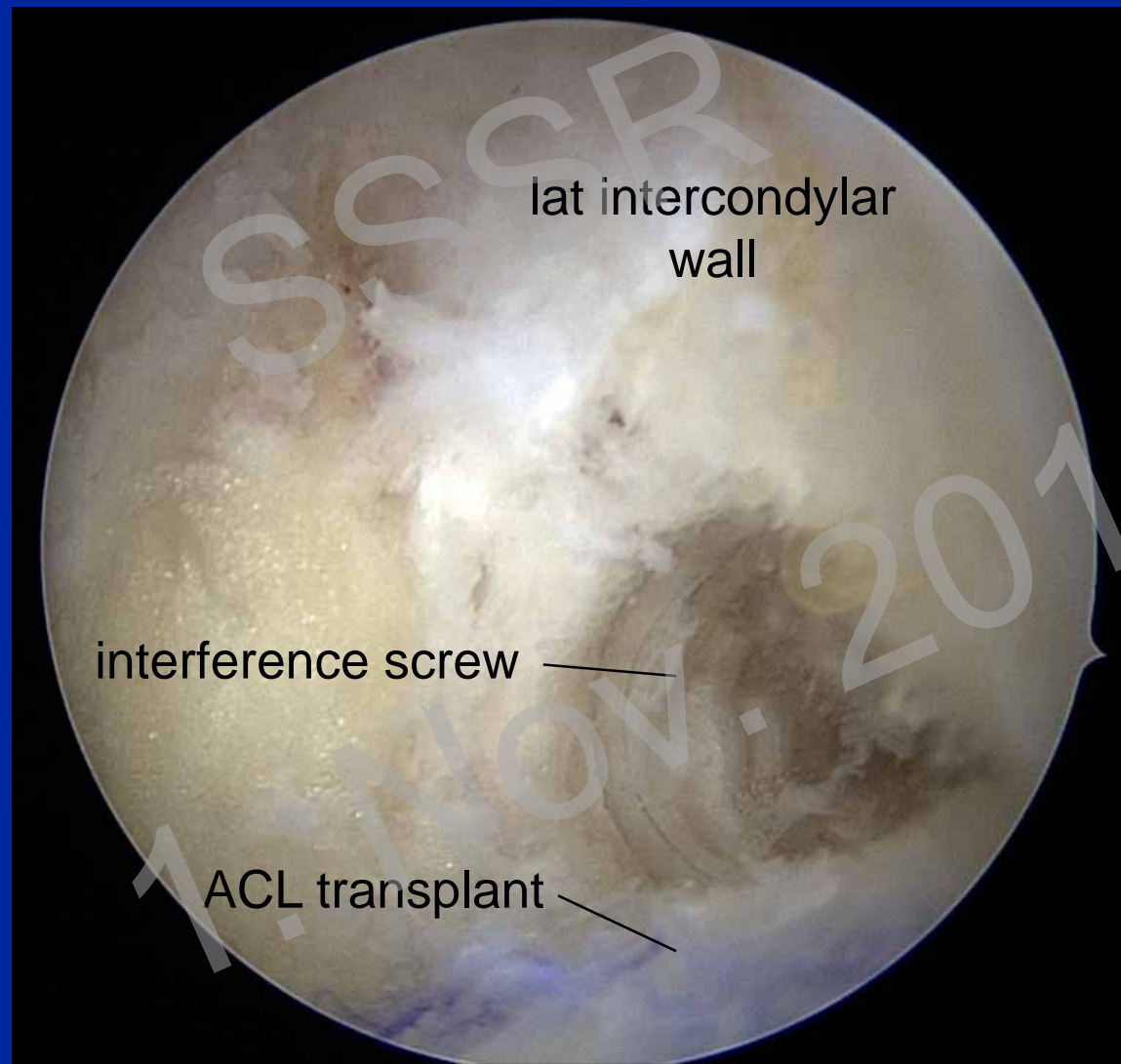
uniklinik  
balgrist



# ACL RECONSTRUCTION



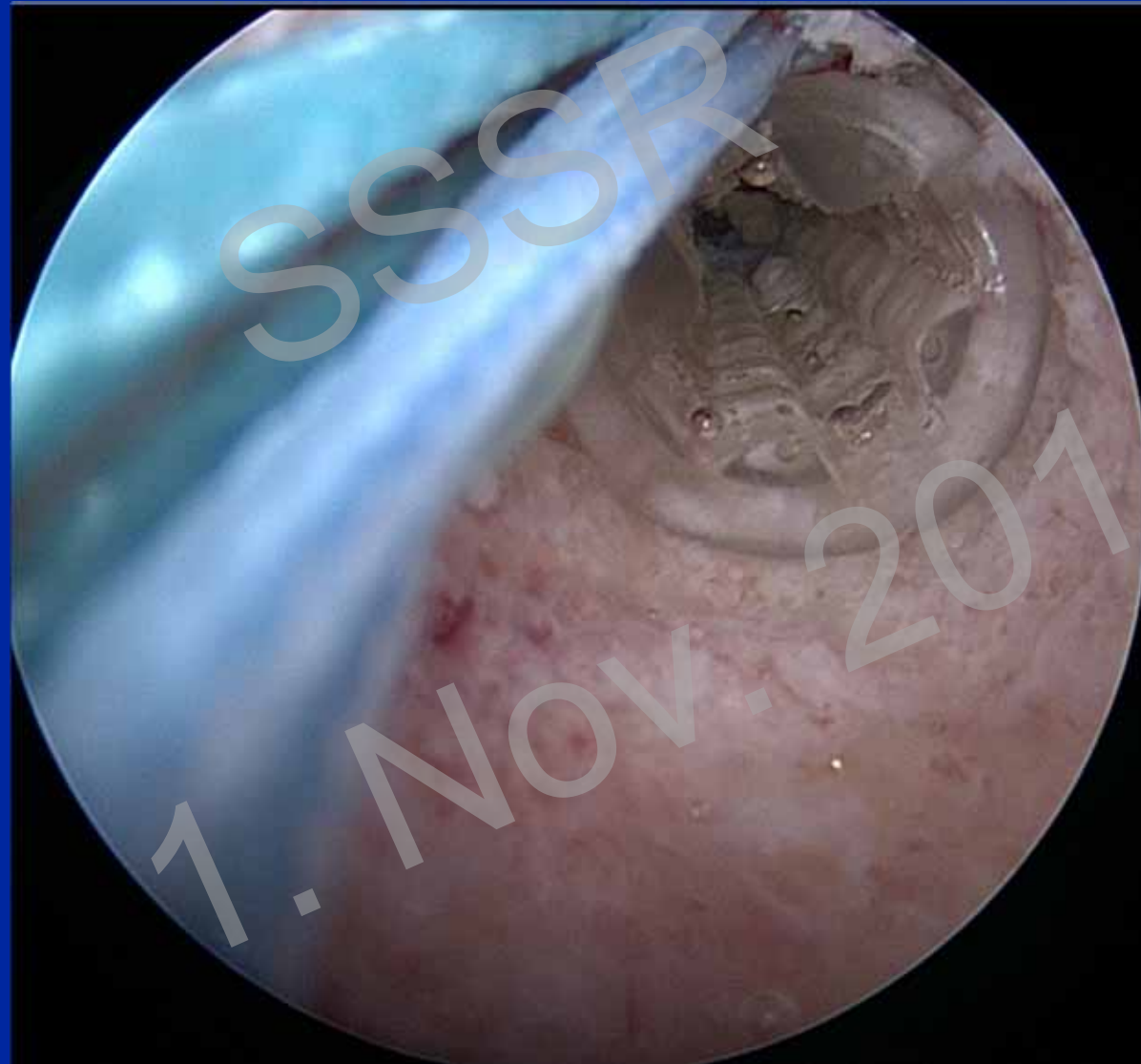
# ACL RECONSTRUCTION



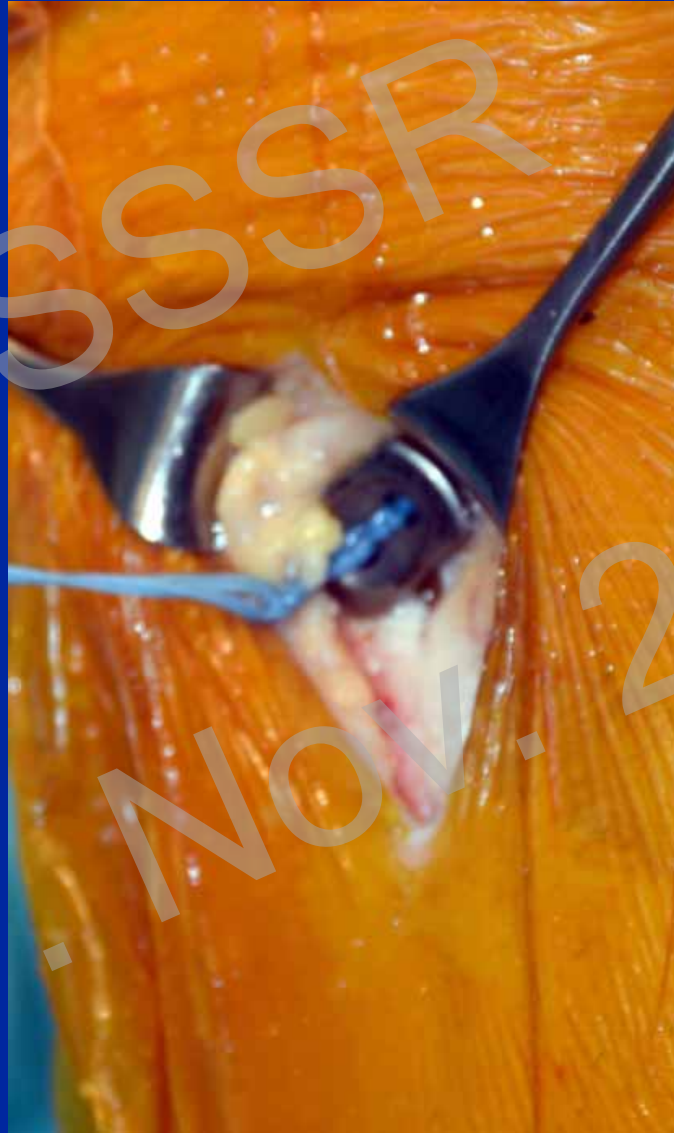
# ACL RECONSTRUCTION



# ACL RECONSTRUCTION

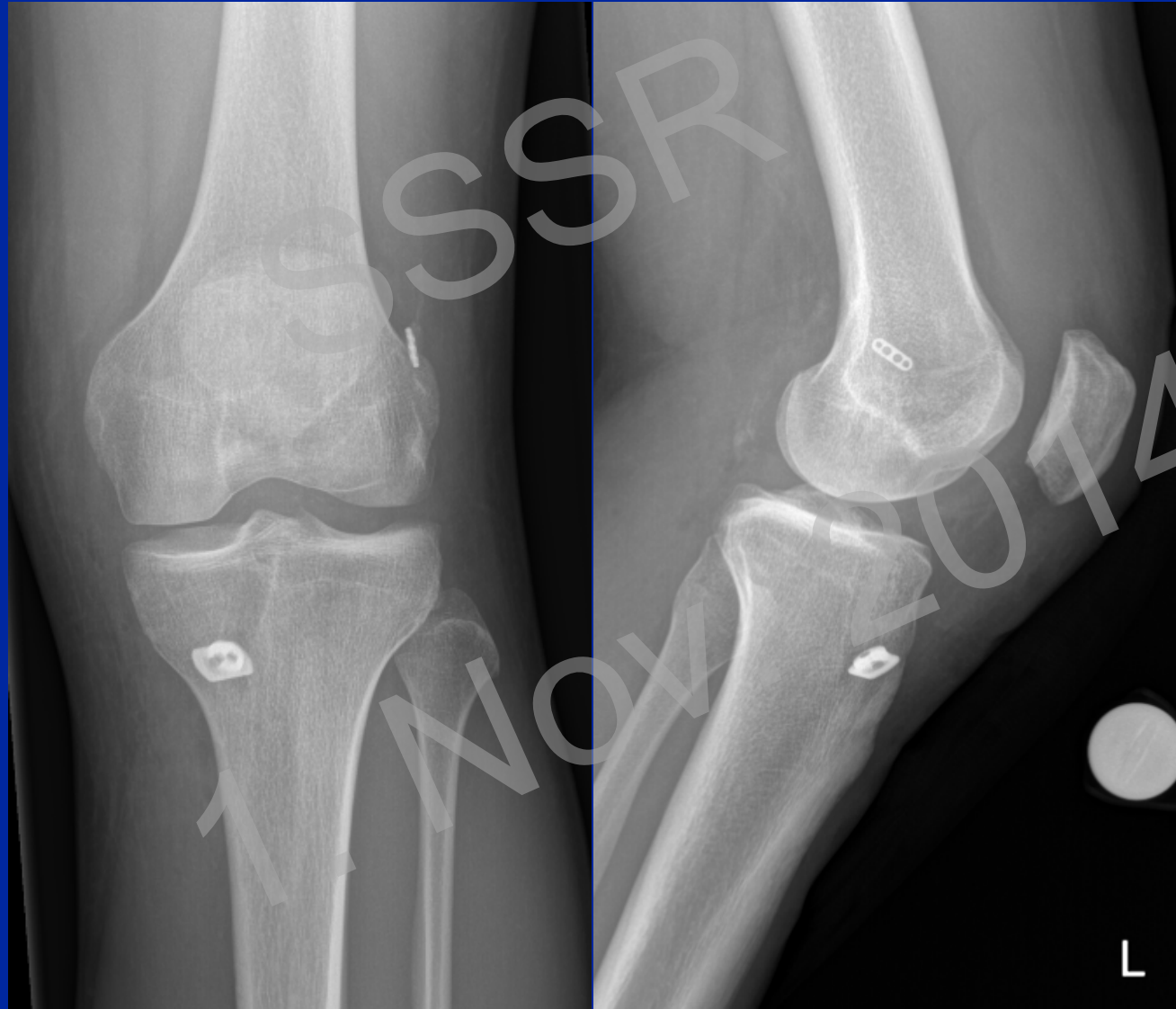


# ACL RECONSTRUCTION





# POSTOP X-RAY



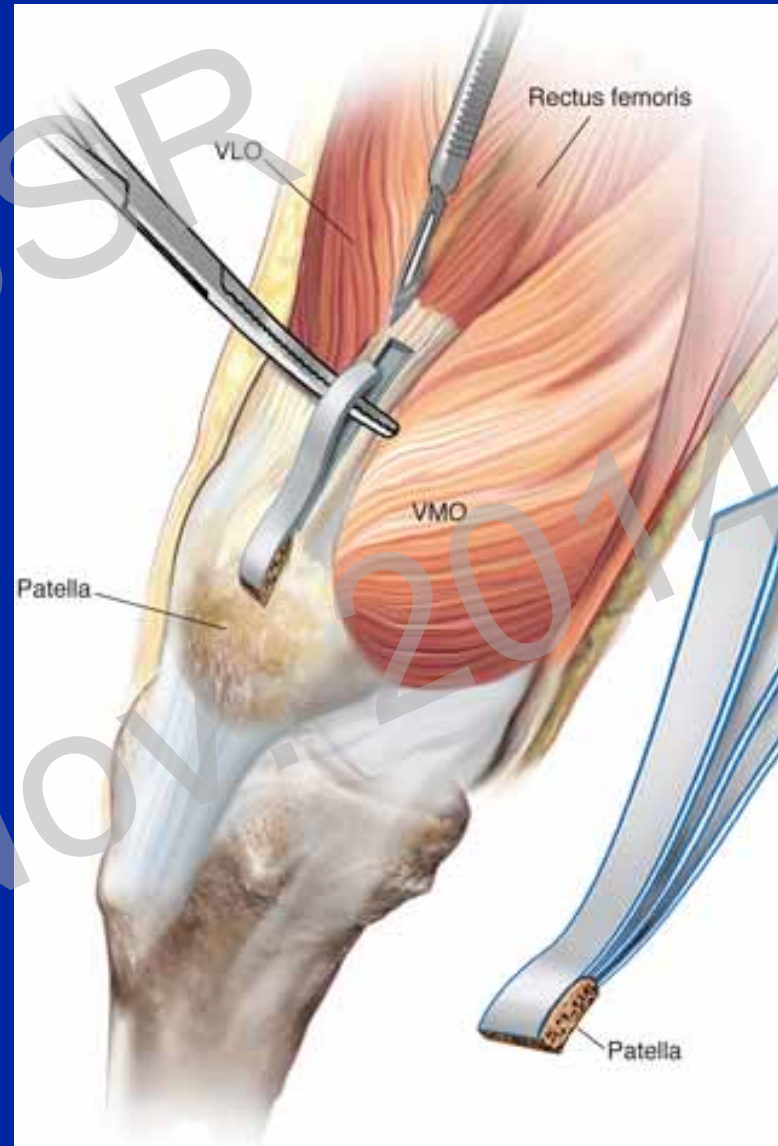
# ALTERNATIVE TECHNIQUES / MATERIALS

- Patellar tendon  
(Bone Tendon Bone )



# ALTERNATIVE TECHNIQUES / MATERIALS

- Quadriceps tendon  
(Tendon +/- Bone)



# ALTERNATIVE TECHNIQUES / MATERIALS

---

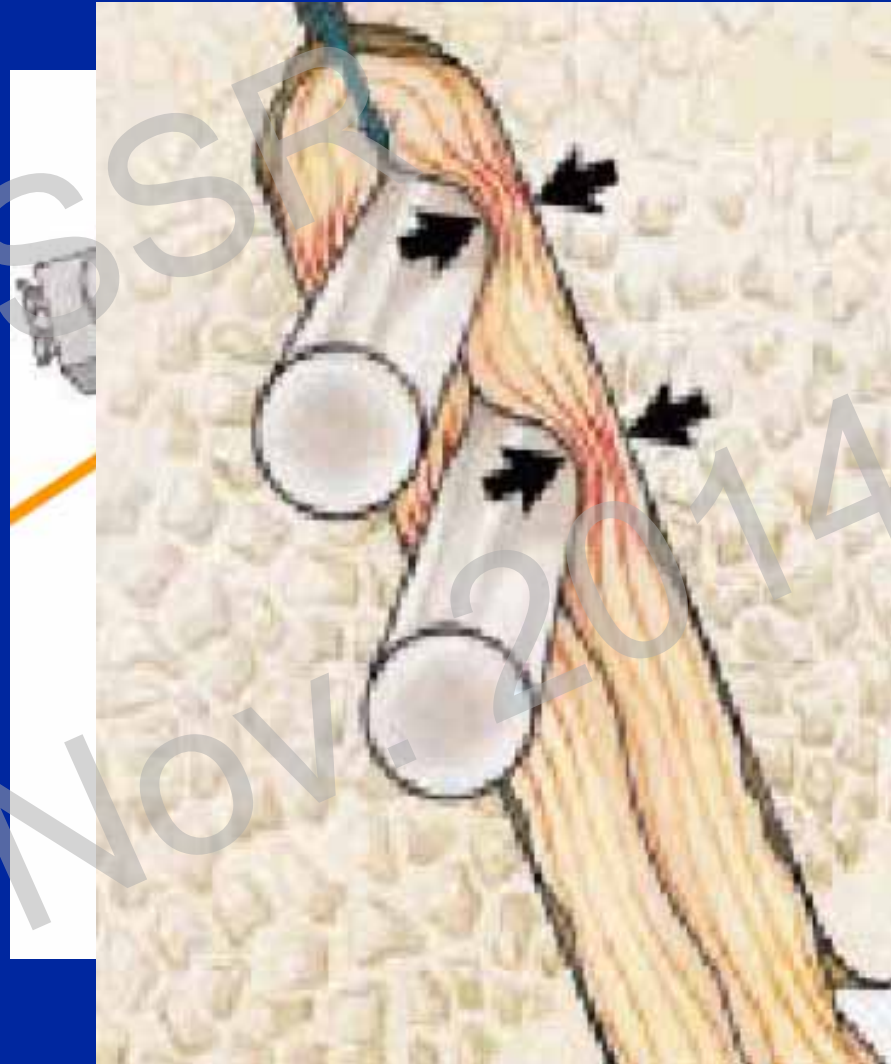
- Allograft tendon (Patellar, Achilles, Peroneal, Hamstrings, Posterior Tibialis,...)

1. Nov. 2014



# ALTERNATIVE TECHNIQUES / MATERIALS

DePuy Rigidfix  
(bioabsorbable Pins)



© DePuy– RIGIDFIX

uniklinik  
balgrist

# CASE 4

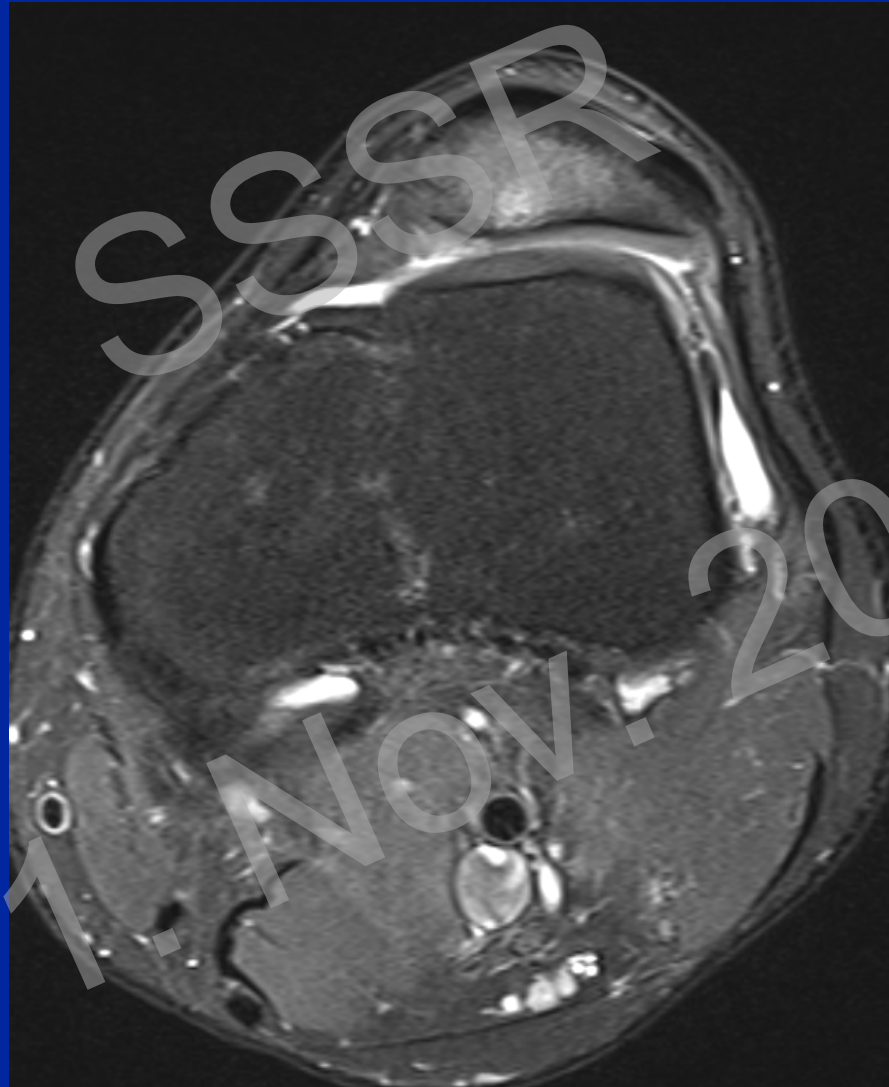
---

- 20 yo, male
- Recurring left patellar dislocations
- Positive patellar apprehension
- Hyperlaxity

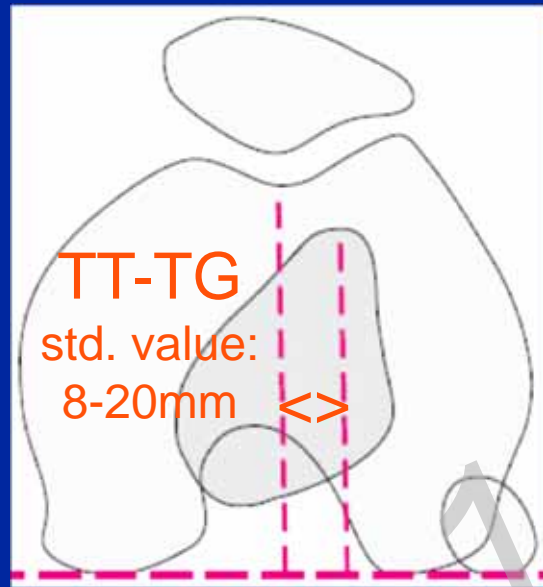
SSSR  
1. Nov. 2014



# MRI



# MRI

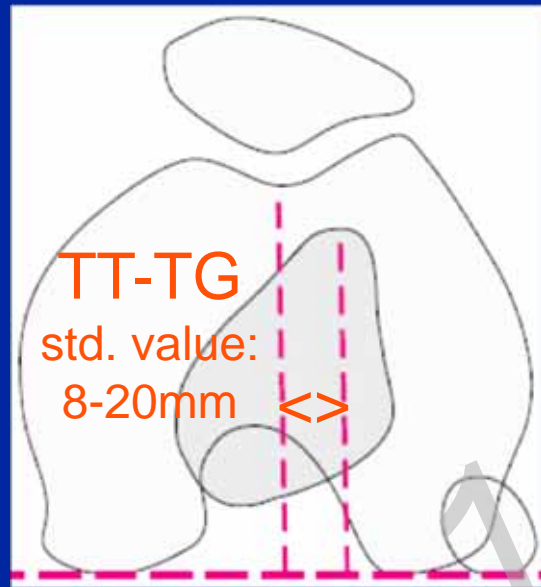


Goutallier D (1978), Rev  
Chir Orth 64: 423



# MRI

TT-TG: 9.9 mm



Goutallier D (1978), Rev  
Chir Orth 64: 423

uniklinik  
balgrist

# MRI

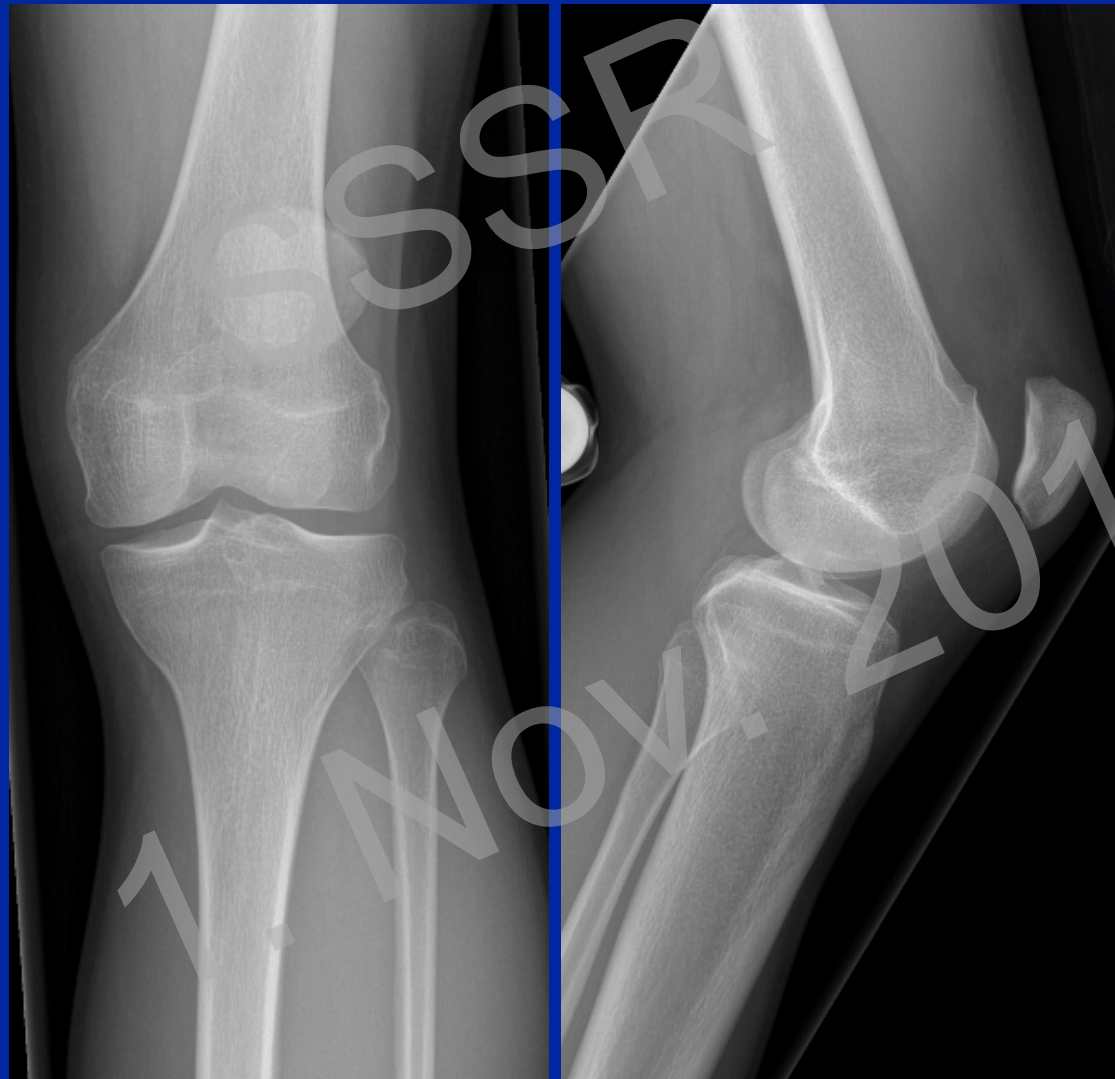


: L 839



uniklinik  
balgrist

# X-RAYS

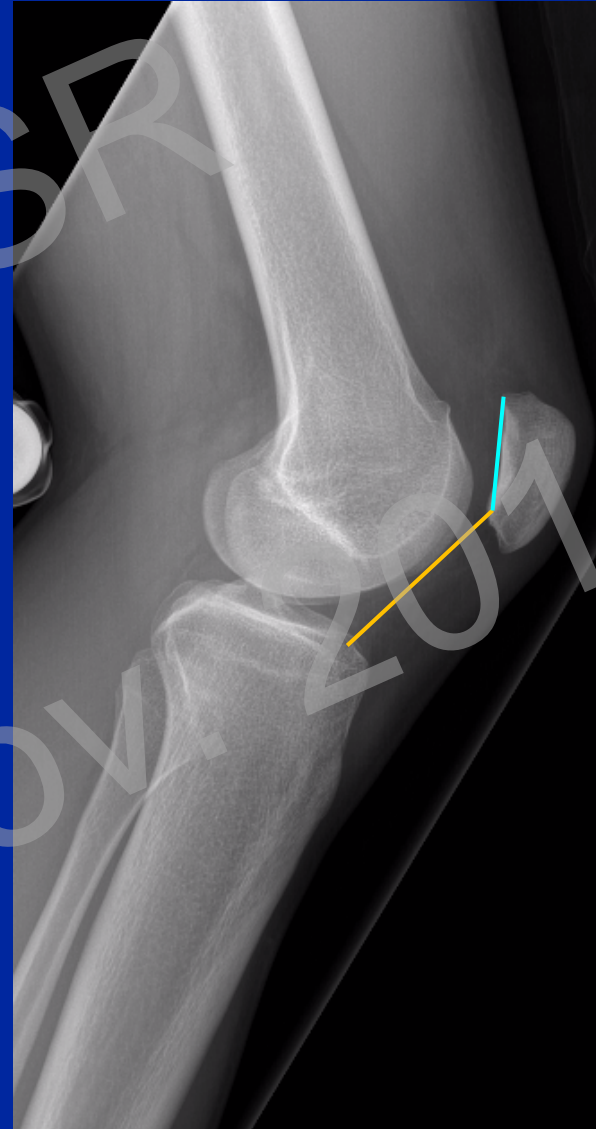


# X-RAYS

**Caton-Deschamps-Index: 1.45**

**= Patella alta**

(std. value: 0.8-1.2)



Caton J (1982), Rev Chir Orth  
168: 317

uniklinik  
balgrist

# X-RAYS

Supratrochlear Spur

+

«Crossing sign»

=

Trochlear Dysplasia Type B



Dejour D et al (1998): Méd Hyg;  
56:1466–1471

uniklinik  
balgrist

# OPERATION

---

- Trochleoplasty
- Distalisation of Tibial Tuberosity
- MPFL-Reconstruction

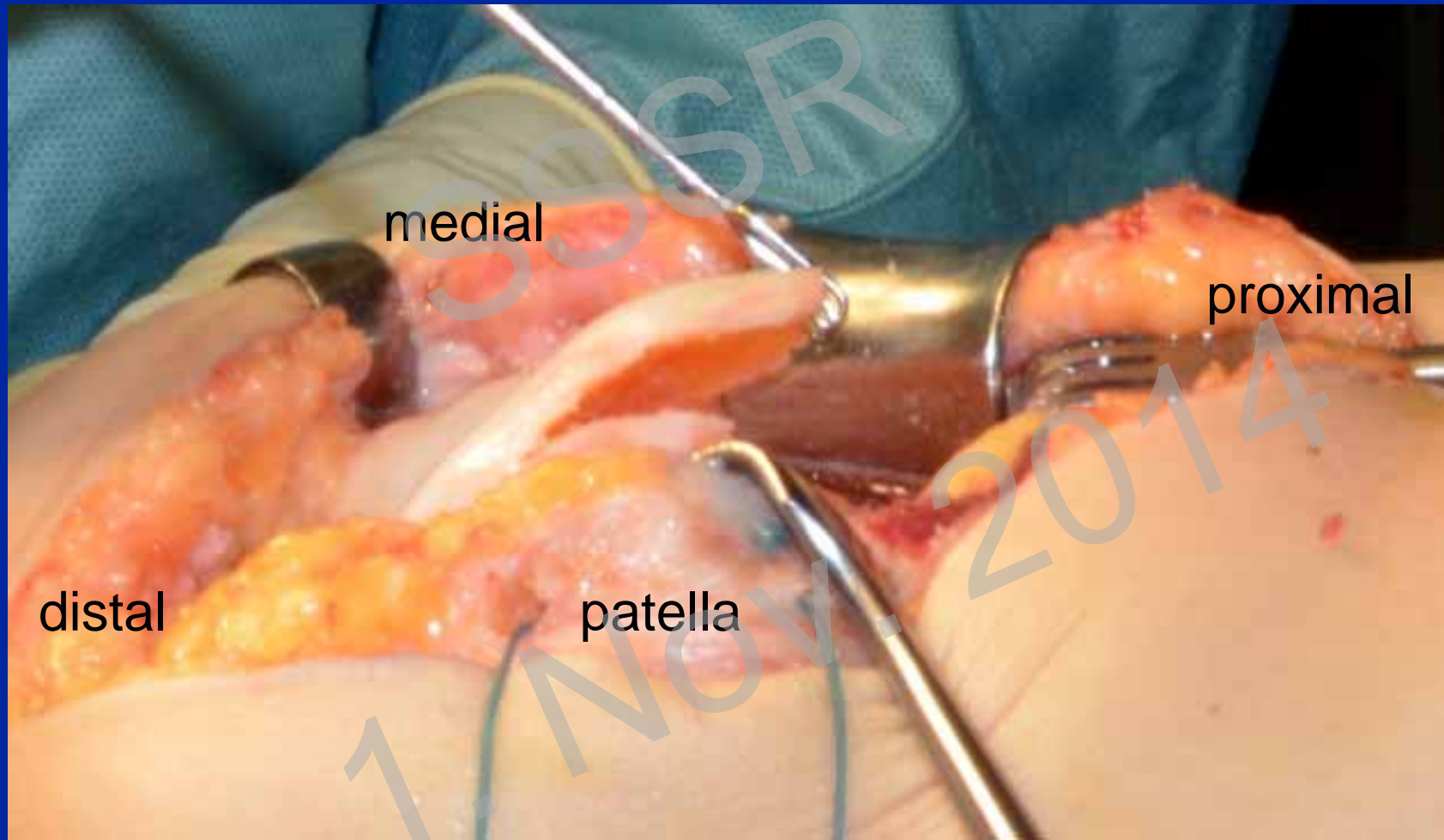
1. Nov. 2014



# TROCHLEOPLASTY



# TROCHLEOPLASTY





# TROCHLEOPLASTY



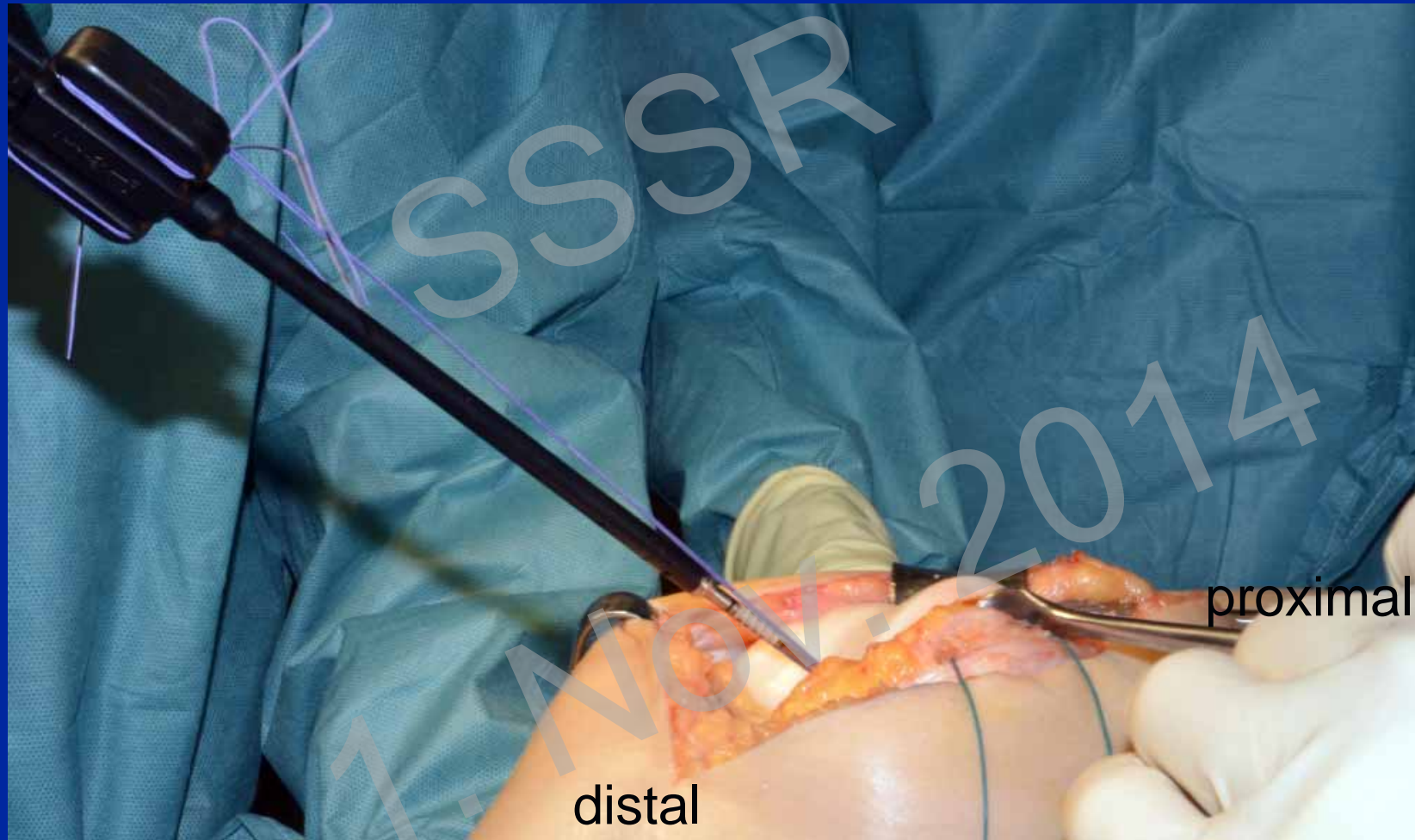
# TROCHLEOPLASTY



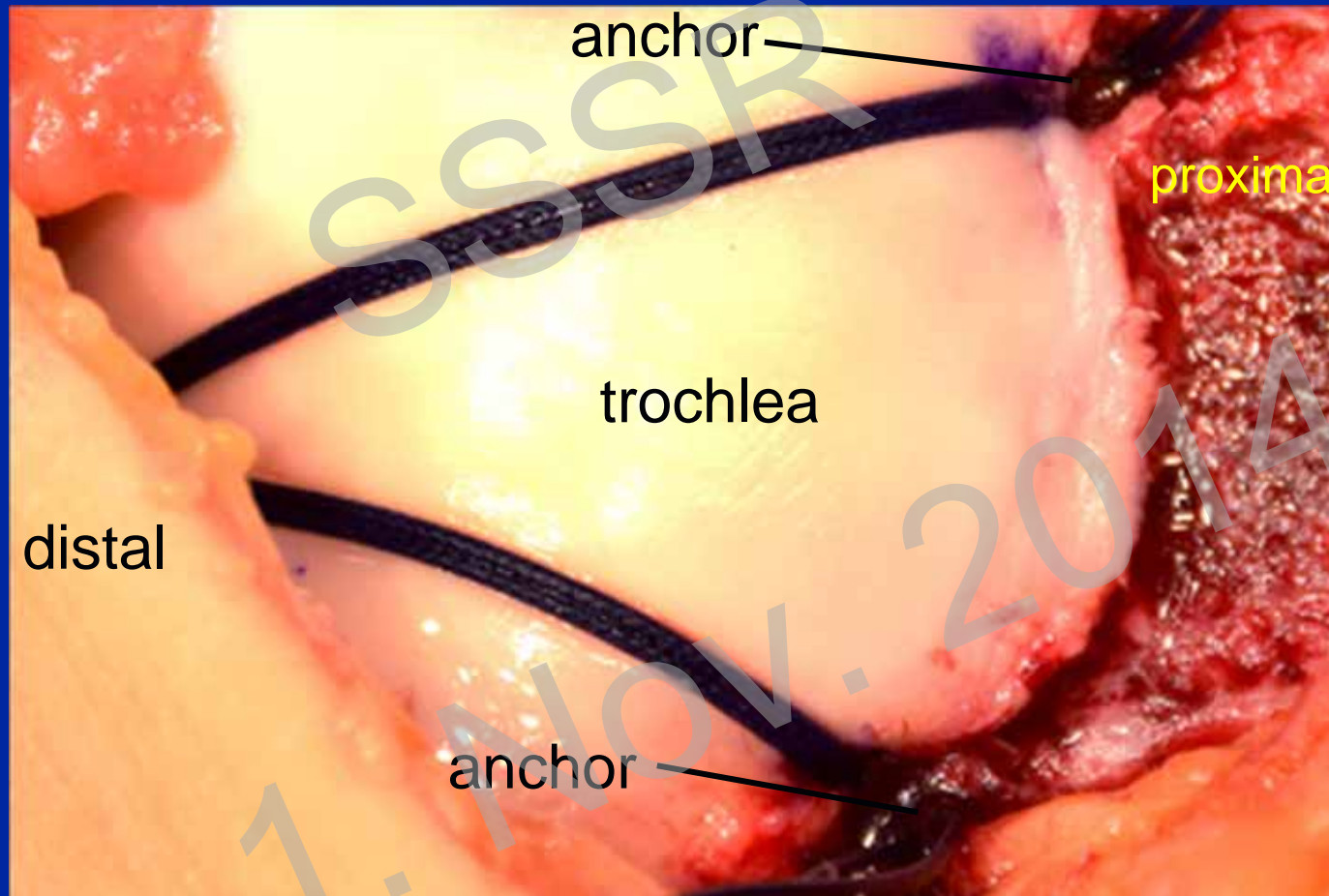
© Arthrex - SwiveLock®

uniklinik  
balgrist

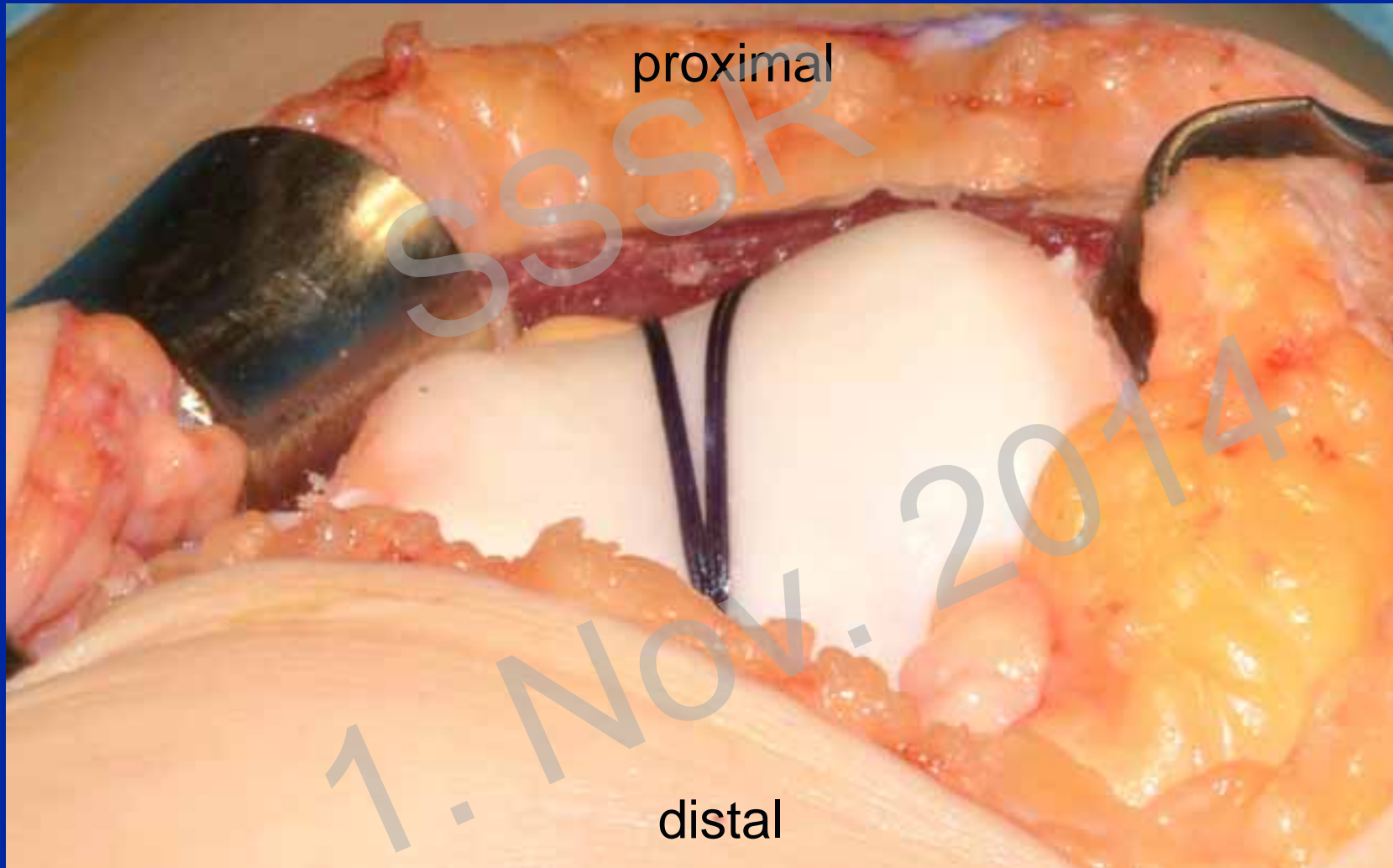
# TROCHLEOPLASTY



# TROCHLEOPLASTY



# TROCHLEOPLASTY



# TIBIAL TUBEROSITY TRANSFER



# TIBIAL TUBEROSITY TRANSFER



# TIBIAL TUBEROSITY TRANSFER





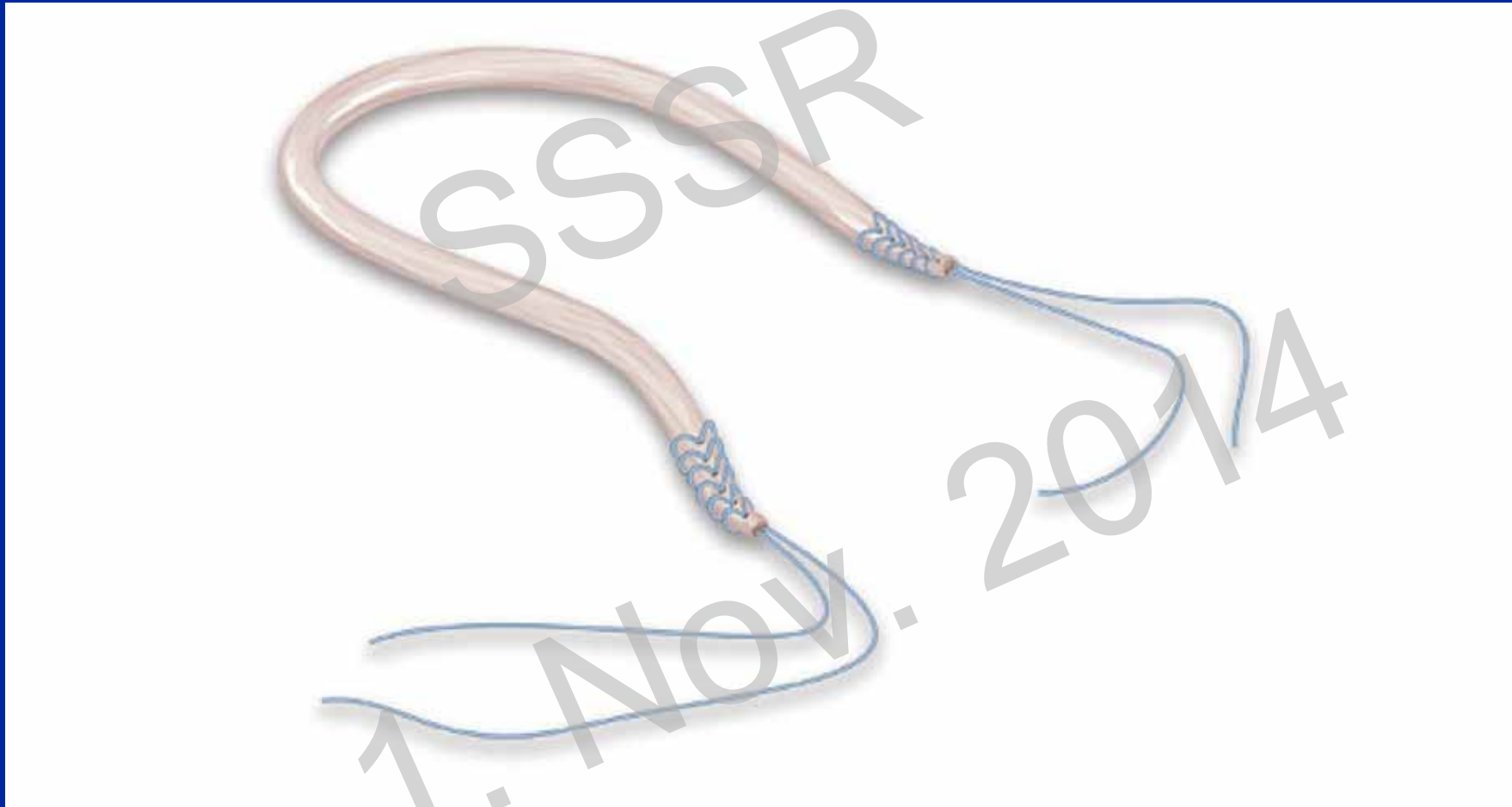
# MPFL RECONSTRUCTION



# GRACILIS AUTOGRAFT



# GRACILIS AUTOGRAFT



# MPFL RECONSTRUCTION

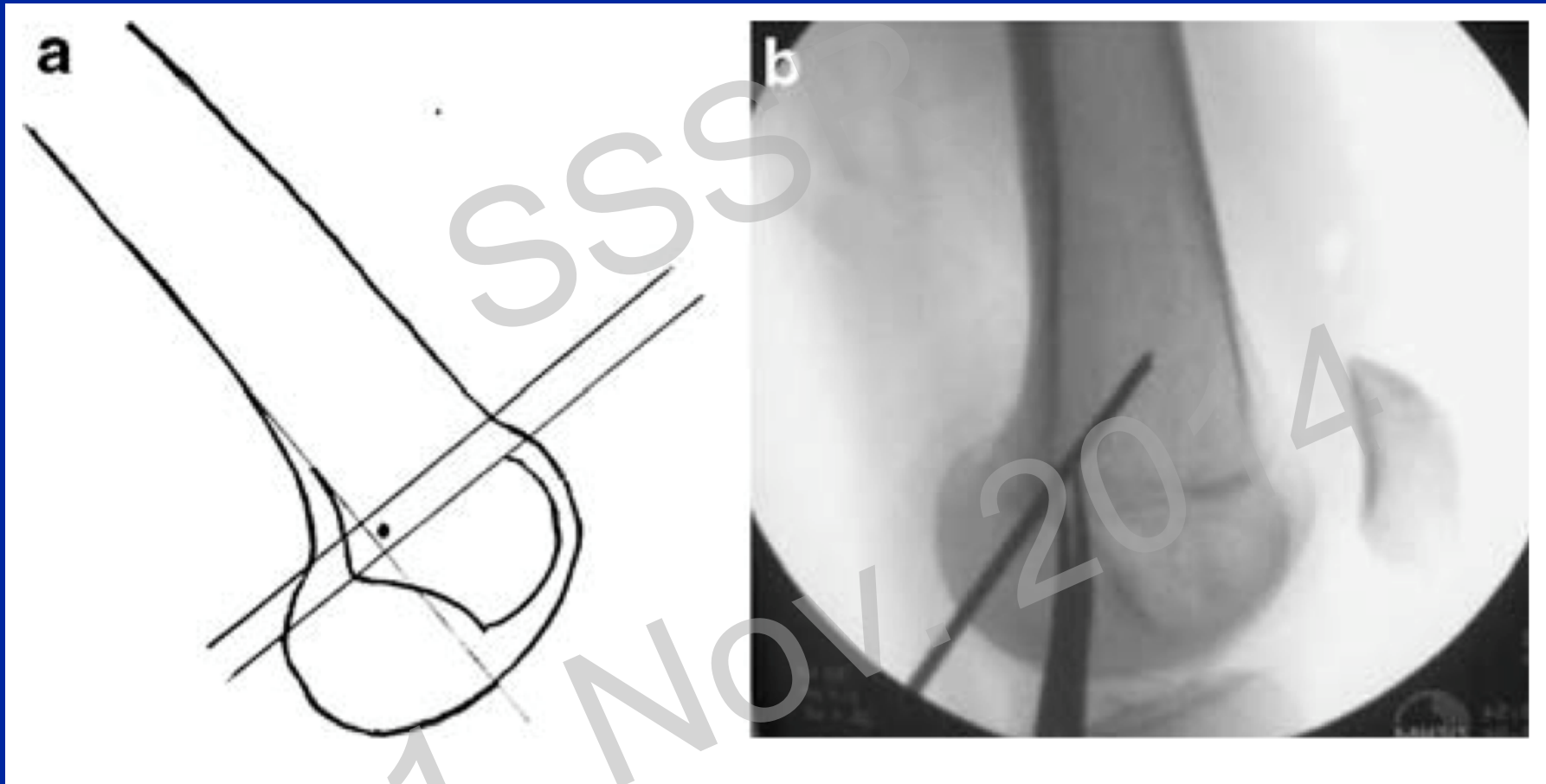


medial

distal



# FEMORAL INSERTION MPFL

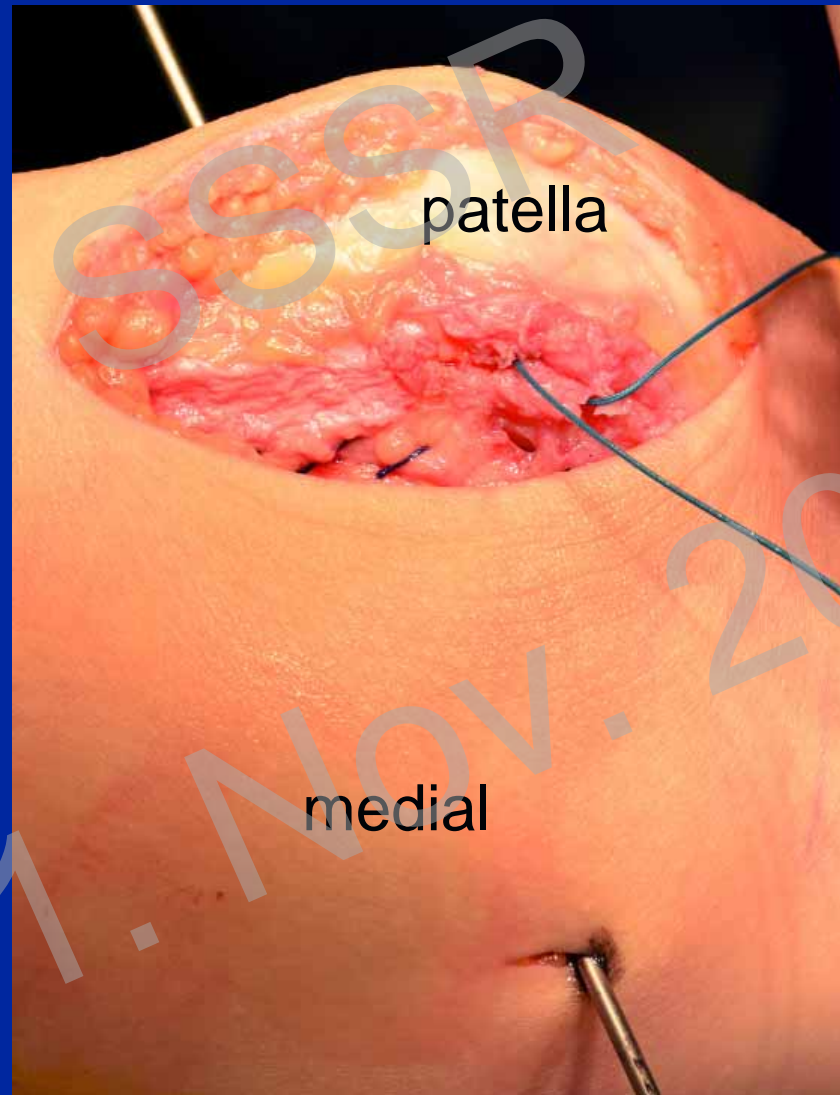


**Schoettle PB et al:** *Radiographic Landmarks For Femoral Tunnel*

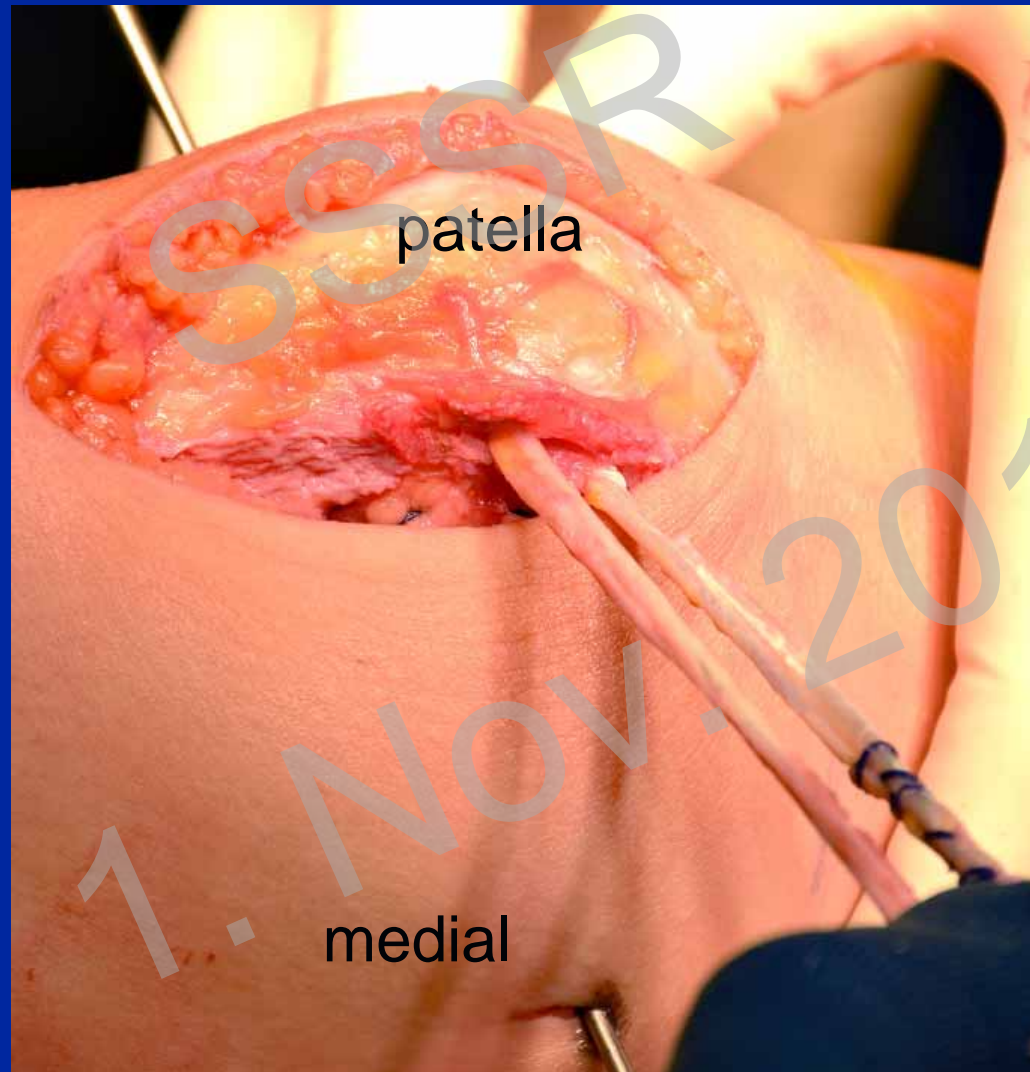
*Placement in MPFL Reconstruction. Am J Sports Med (2007) 35:801–804*

uniklinik  
balgrist

# MPFL RECONSTRUCTION



# MPFL RECONSTRUCTION



# MPFL RECONSTRUCTION





# MPFL RECONSTRUCTION

**Patellar Fixation through  
Converging Bone Tunnels**

**Femoral Fixation by Megafix  
Interference Screw**



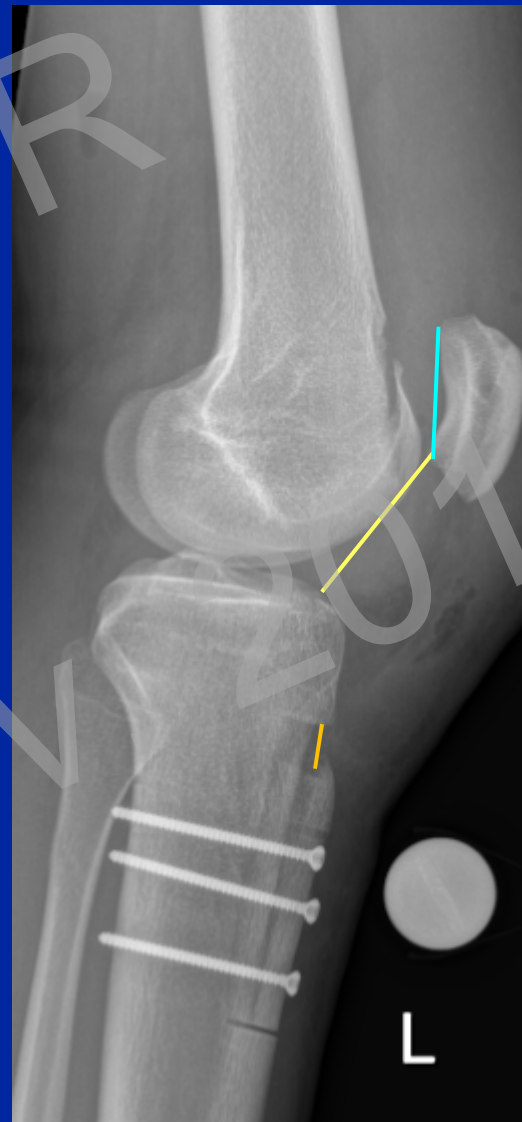
# POSTOP X- RAYS



# POSTOP X- RAYS

Caton-Deschamps-Index: 1.25

Distalisation: 12 mm





**SSSR**

Swiss Society of  
Musculoskeletal Radiology

SSSR  
*uniklinik*  
**balgrist**

1. Nov. 2014



*uniklinik*  
**balgrist**

---

SSSR

1. Nov. 2014



---

SSSR

1. Nov. 2014



uniklinik  
balgrist

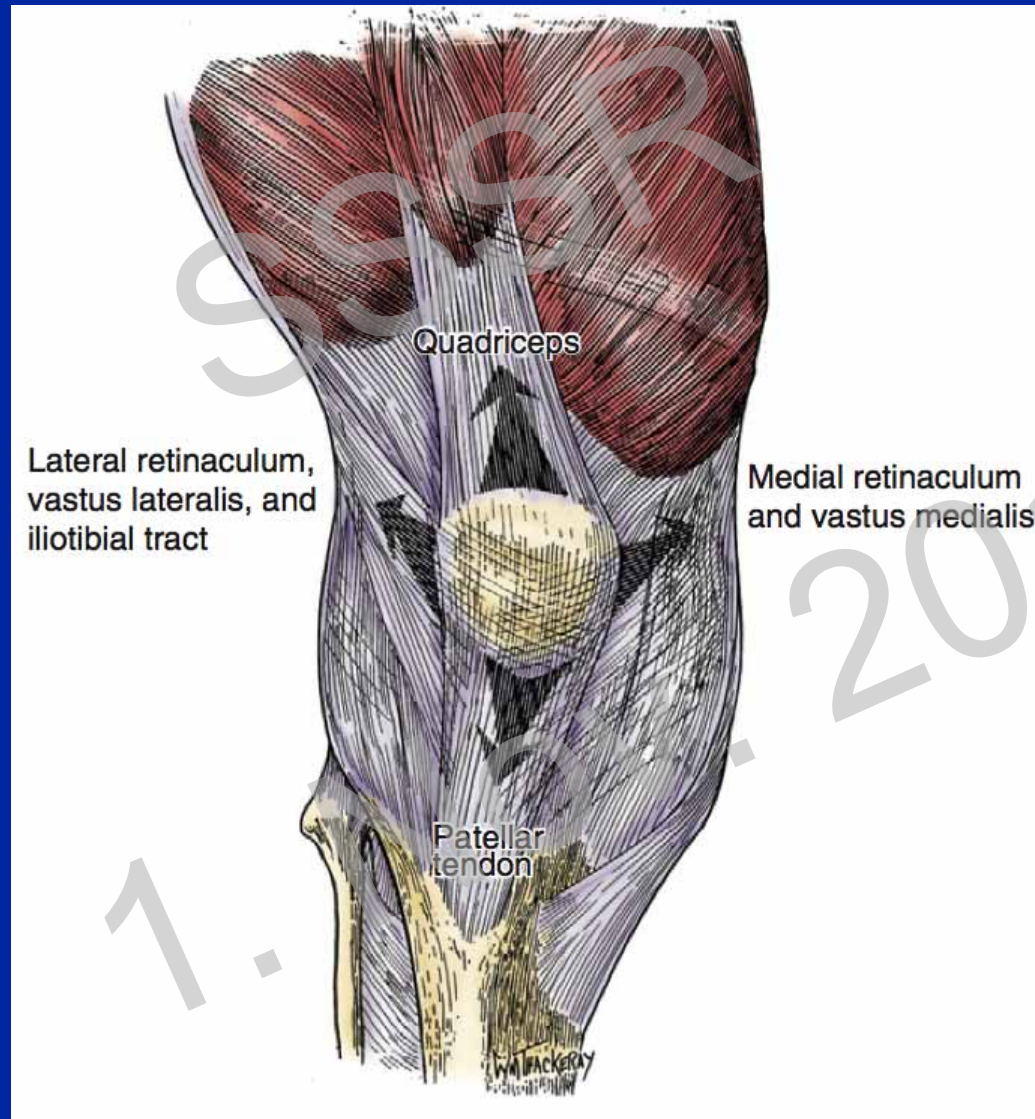
---

SSSR

1. Nov. 2014



uniklinik  
balgrist

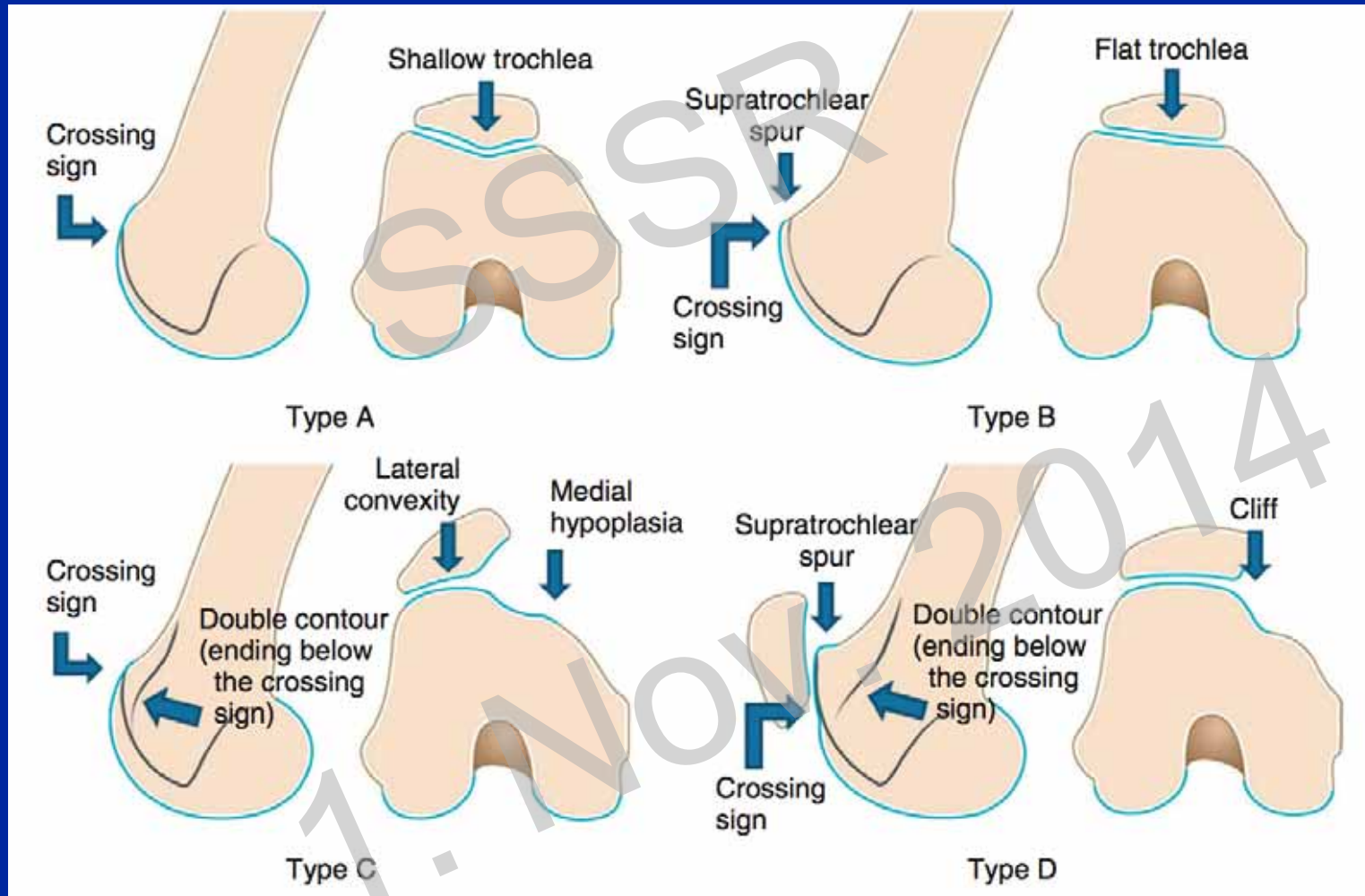




# Q-ANGLE

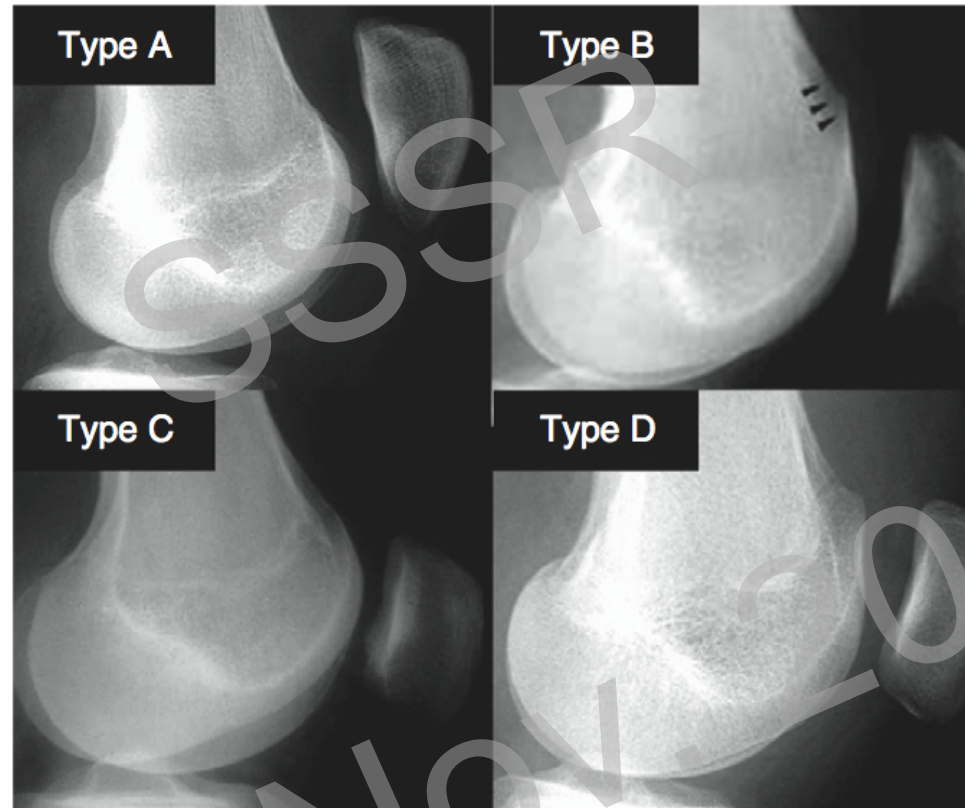


# TROCHLEAR DYSPLASIA



Dejour D et al (1998): Douleurs et instabilité rotulienne. Essai de classification. *Méd Hyg*; 56:1466–1471

# TROCHLEAR DYSPLASIA



**Figure 61-12.** Trochlear dysplasia assessed in lateral views. The crossing sign, the supratrochlear spur, and the double-contour sign should be assessed to classify it. *Type A*: only crossing sign is present. *Type B*: crossing sign and trochlear spur can be seen. *Type C*: crossing sign and double-contour sign representing the medial hypoplastic facet are present. *Type D*: all the mentioned signs are combined: crossing sign, supratrochlear spur, and double-contour sign.